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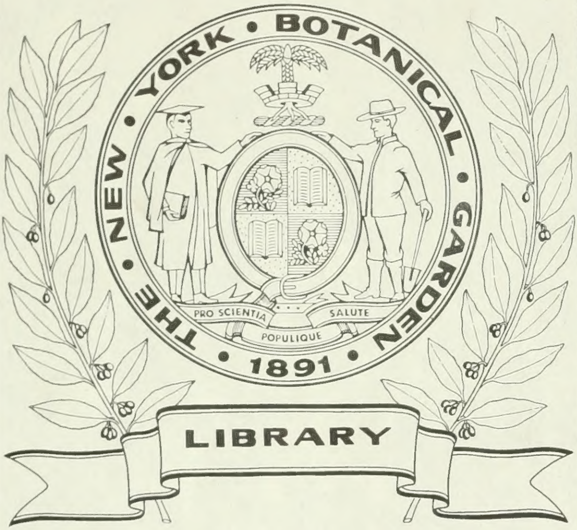

THE NEW YORK BOTANICAL GARDEN
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ADDISONIA

COLORED ILLUSTRATIONS
AND
POPULAR DESCRIPTIONS
OF
PLANTS

VOLUME 6
1921

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GARDEN

PUBLISHED BY
THE NEW YORK BOTANICAL GARDEN
(ADDISON BROWN FUND)

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Vol.6
1921

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VOLUME 6 NUMBER 1

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PUBLISHED BY
THE NEW YORK BOTANICAL GARDEN
(ADDISON BROWN FUND)
JUNE 29, 1921

ANNOUNCEMENT

A bequest made to the New York Botanical Garden by its late President, Judge Addison Brown, established the

ADDISON BROWN FUND

"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonomy, and a brief statement of the known properties and uses of the plants illustrated."

The preparation and publication of the work have been referred to Dr. John H. Barnhart, Bibliographer, and Mr. George V. Nash, Head Gardener.

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NEW YORK CITY

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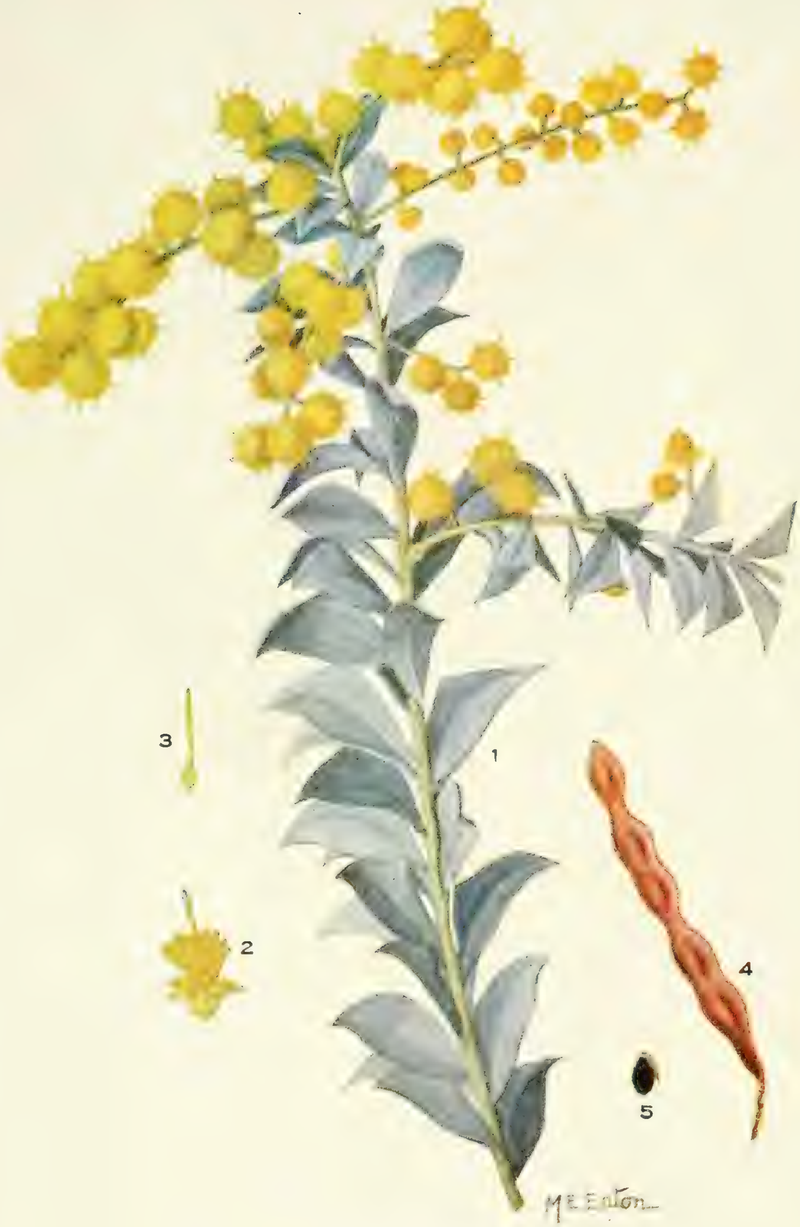

ACACIA SCAPULIFORMIS

(Plate 193)

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ACACIA SCAPULIFORMIS

Knife-shaped Acacia

Native of New South Wales

Family MIMOSACEAE MIMOSA Family

Acacia scapuliformis A. Cunn.; G. Don, Gen. Syst. 2: 405. 1832.
Acacia cultriformis A. Cunn.; G. Don, Gen. Syst. 2: 406. 1832.

This, on account of its odd-shaped phyllodes and bluish grey color, is one of the most striking acacias in cultivation. It is said to flower in March and April, but in the conservatories of the New York Botanical Garden, where specimens are planted out in the central display house of range 2, the blossoms appear in February; the illustration was prepared from one of these. It becomes a rather large shrub which may be kept well-pruned and used as a hedge-plant in localities where the climate permits cultivation in the open. This acacia is well adapted to the cool conservatory, where it may be grown either in pots or planted out.

The genus *Acacia* is a large one, containing upward of five hundred species, widely distributed in tropical and the warmer temperate regions. In Australia they are very numerous, those in cultivation here coming mainly from the southern or temperate areas; these will not stand much frost, but are said to survive a temperature as low as 18° to 20° Fahrenheit.

There are two well-marked groups: in one the leaves are bipinnate, the species being widely distributed, some of them Australian; in the other group the so-called leaves are leaf-like developments of the rachis and petiole, called phyllodes, with the edges placed vertically—the species of this kind being confined almost exclusively to Australia and the Pacific islands.

The temperate species are of easy culture, especially those from Australia, whence are derived the greater part of the kinds commonly cultivated for ornament. In California a number of species are grown for ornament or for shade trees. Acacias grow very rapidly, reaching their maturity in twenty to thirty years, when they are apt to deteriorate, so for permanent effects other trees should be selected. Some of them make such rapid growth that they become lanky and ungainly; such should be rather severely pruned, thus not only improving their general appearance, but also

1 - 1921

increasing the number of blossoms. In cultivation under glass a night temperature of 40° to 50° is sufficient. Some of the dwarf species, such as *Acacia armata* (often cultivated under the name of *Acacia paradoxa*), *A. lineata*, and *A. Drummondii*, are especially suitable for pot culture, making medium sized compact plants.

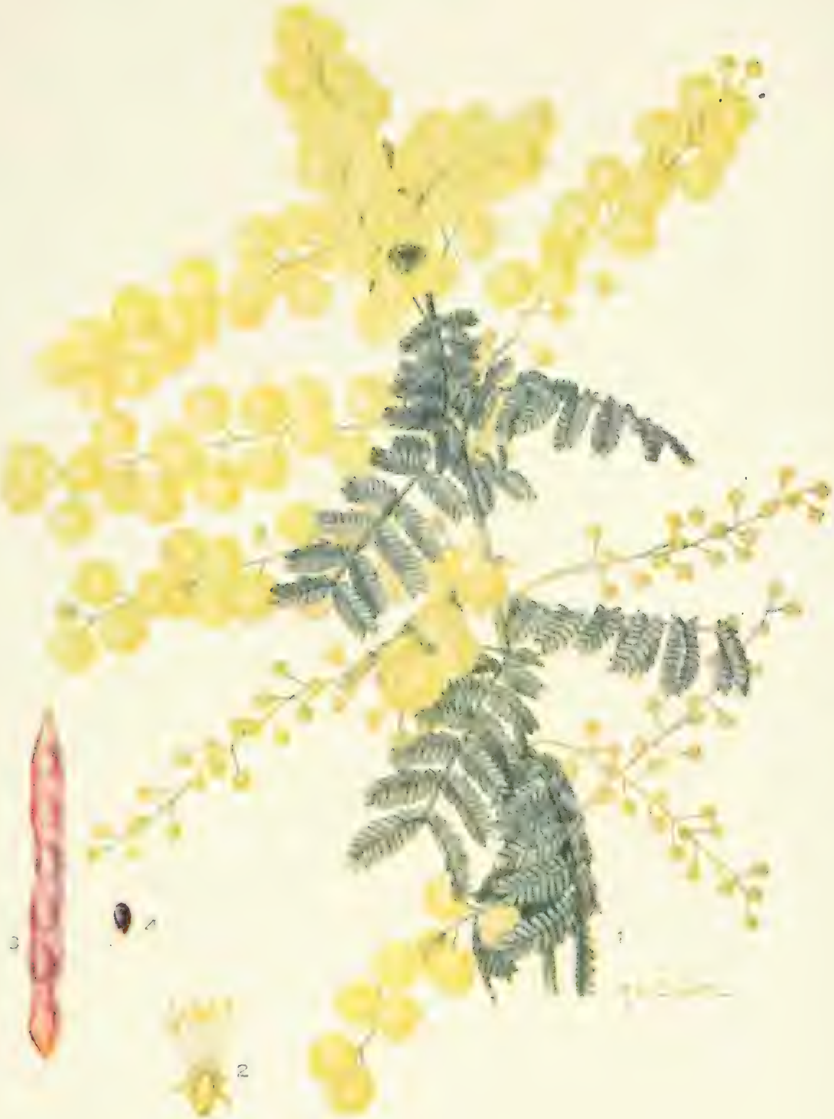
Propagation may be effected by means of seeds, by cuttings, or by grafting. The seeds should be sown in the propagating house, preferably in the spring. Before sowing pour hot water over them, allowing them to remain in the cooling liquid from twelve to forty-eight hours; they are to be sown while still wet. The seeds thus treated should germinate in from one to four weeks, depending on the species. After germination they are pricked off into pots or flats, and repotted as necessity arises. For cuttings, of such species as may be propagated in this manner, select side shoots with a heel, taken from the main stem; the wood should be half ripened, the best time for this method of propagation being in June; no bottom heat, or very little, is required.

Besides their value as decorative plants, many of the acacias are of economic importance. From *A. Senegal* most of the gum arabic of commerce is obtained; *A. Catechu* furnishes a drug or medicine; from others are secured dyes and fibres, and the leaves of some are used for culinary purposes. Some furnish valuable wood for furniture and cabinet work. *A. Seyal* yielded the "shittim" wood of the Bible, employed for the Ark of the Covenant; this wood, on account of its lasting qualities, was used by the Egyptians for the coffins of their kings.

The knife-shaped acacia is a shrub of a bluish-grey hue, the heads of bright yellow flowers borne in racemes. The phyllodes, closely arranged upon the branches, are falcate-elliptic or almost triangular, thick, up to an inch long and half an inch wide, the apex acute, cuspidate, the base wedge-shaped or somewhat rounded; the margins are thickened, and there is one nerve, not quite central, the lateral nerves and veins anastomosing quite prominently; there is a sessile gland on the upper edge below the middle, sometimes at the apex of an angle. The heads, containing thirty to forty flowers, are about three sixteenths of an inch in diameter, are on stalks shorter than their diameter, and are arranged in short racemes which are much longer than the phyllodes. The pods are brown, with the margins vein-like, and are often constricted between the seeds. The seeds are oblong and placed longitudinally.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Flower, × 4. Fig. 3.—Pistil, × 4. Fig. 4.—Fruit. Fig. 5.—Seed.



ACACIA PUBESCENS

(Plate 194)

ACACIA PUBESCENS

Hairy Wattle

Native of New South Wales

Family MIMOSACEAE MIMOSA Family

Mimosa pubescens Vent. Jard. Malm. 21. 1803.
Acacia pubescens R. Br.; Ait. Hort. Kew. ed. 2. 5: 467. 1813.

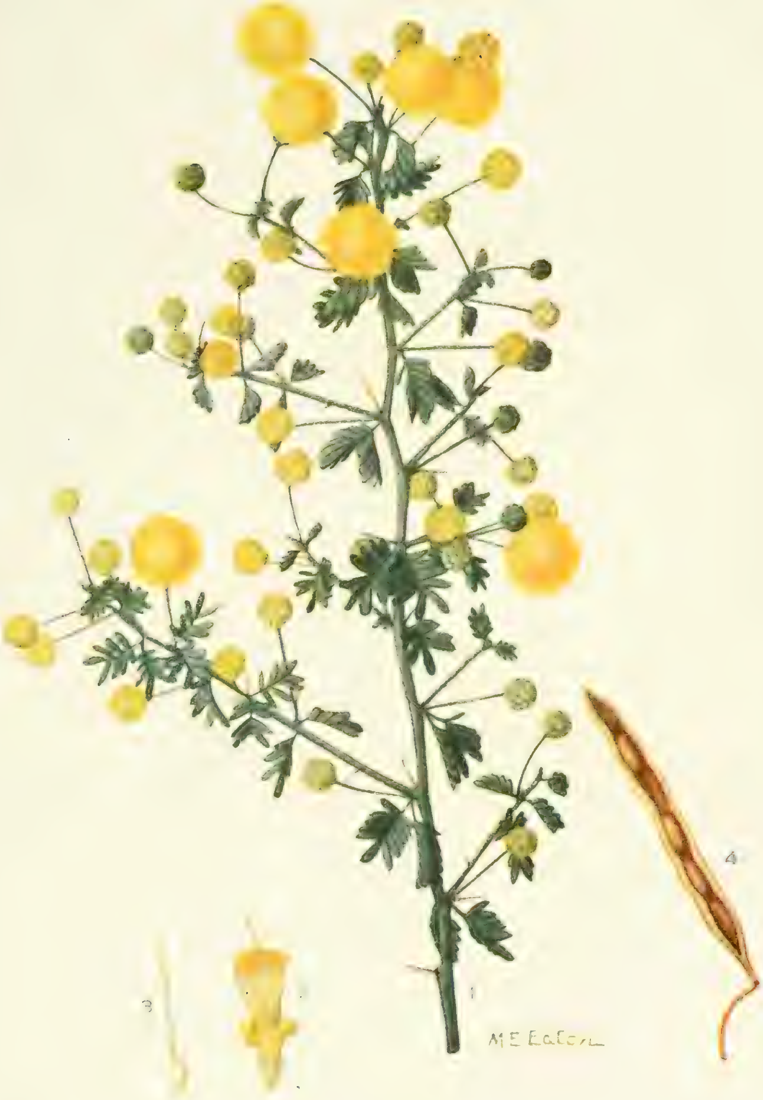
About the time of Easter there appears in the windows of the florists a plant of graceful habit, with drooping branches covered with delicate foliage of a greyish blue, and a profusion of bright yellow flowers in round heads. This is the hairy wattle, one of the most charming of the acacias. Those who visited the International Flower Show a few years ago will recall the wonderful display of these plants, in pot-grown specimens, one of the striking features of that show. The daintiness and gracefulness of the plant, and the pleasing harmony of the delicate foliage and the bright blossoms, make of this one of the most delightful objects in a cool conservatory, where it may be grown either in pots or as a permanent feature planted out. There is a specimen of this species in the central display house at conservatory range 2, New York Botanical Garden; it is from this plant that the illustration has been prepared. There is a collection of about twenty-five kinds of acacias in this same house, and as the flowering period of the different varieties varies, specimens may be seen in bloom from late in December to late March or early April. They grow rampantly when planted out, luxuriating in the freedom of root-action.

This was one of the first of the Australian acacias with compound leaves to be brought into cultivation, having been introduced into England about 1790 by Sir Joseph Banks, who also introduced other species of the same genus.

The hairy wattle is a shrub with hairy branches, compound leaves, and bright yellow flowers. The leaves are one and a half to three inches long and up to one and a quarter inches broad, with the rachis hirsute, and have up to ten pairs of spreading pinnae which are a half to three quarters of an inch long and up to five sixteenths of an inch wide; on the pinnae there are up to twenty pairs of leaflets which are oblong-linear, up to three sixteenths of an inch long, inequilateral at the base, obtuse or acutish at the apex. The globose heads contain fifteen to twenty flowers, are about three sixteenths of an inch in diameter, are on slender stalks longer than their diameter, and are arranged in racemes which are much longer than the leaves. The pods are a rich brown, often somewhat constricted between the seeds, up to two inches long. The seeds are elliptic, placed longitudinally in the pod.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Flower, × 4. Fig. 3.—Fruit. Fig. 4.—Seed.



ACACIA PULCHELLA

(Plate 195)

ACACIA PULCHELLA

Beautiful Acacia

Native of West Australia

Family MIMOSACEAE MIMOSA Family

Acacia pulchella R. Br.; Ait. Hort. Kew. ed. 2. **5**: 464. 1813.

This acacia was introduced into cultivation about 1803. It is quite in contrast with the other species illustrated here, being of compact growth with the branches rather intricately massed; it usually bears spines in the axils of the leaves. Arising from the axils of the upper leaves are solitary slender stalks, much exceeding the leaf, bearing a solitary globose head of flowers which is unusually large for the size of the plant. A plant of this, a compact mass of dark green covered with the numerous heads of orange flowers, is a most charming object, either as a pot plant or as a permanent feature, planted out, in the cool conservatory. From such a plant in the central display house, range 2, New York Botanical Garden, has the illustration been prepared.

The beautiful acacia is a rather low usually glabrous shrub of dense habit and intricate branching, the leaves of a single pair of pinnae, and the orange flowers in solitary heads on slender stalks in the upper leaf-axils. The pinnae are a quarter to three eighths of an inch long and about a quarter of an inch wide, with four to seven pairs of leaflets which are about an eighth of an inch long and oblong-linear, or sometimes a little broader at the obtuse apex. The flower-heads are a quarter to five sixteenths of an inch in diameter, solitary, on slender stalks up to a half inch long. The flat pod has thickened margins, and is one to two inches long. The seeds are oblong and placed longitudinally.

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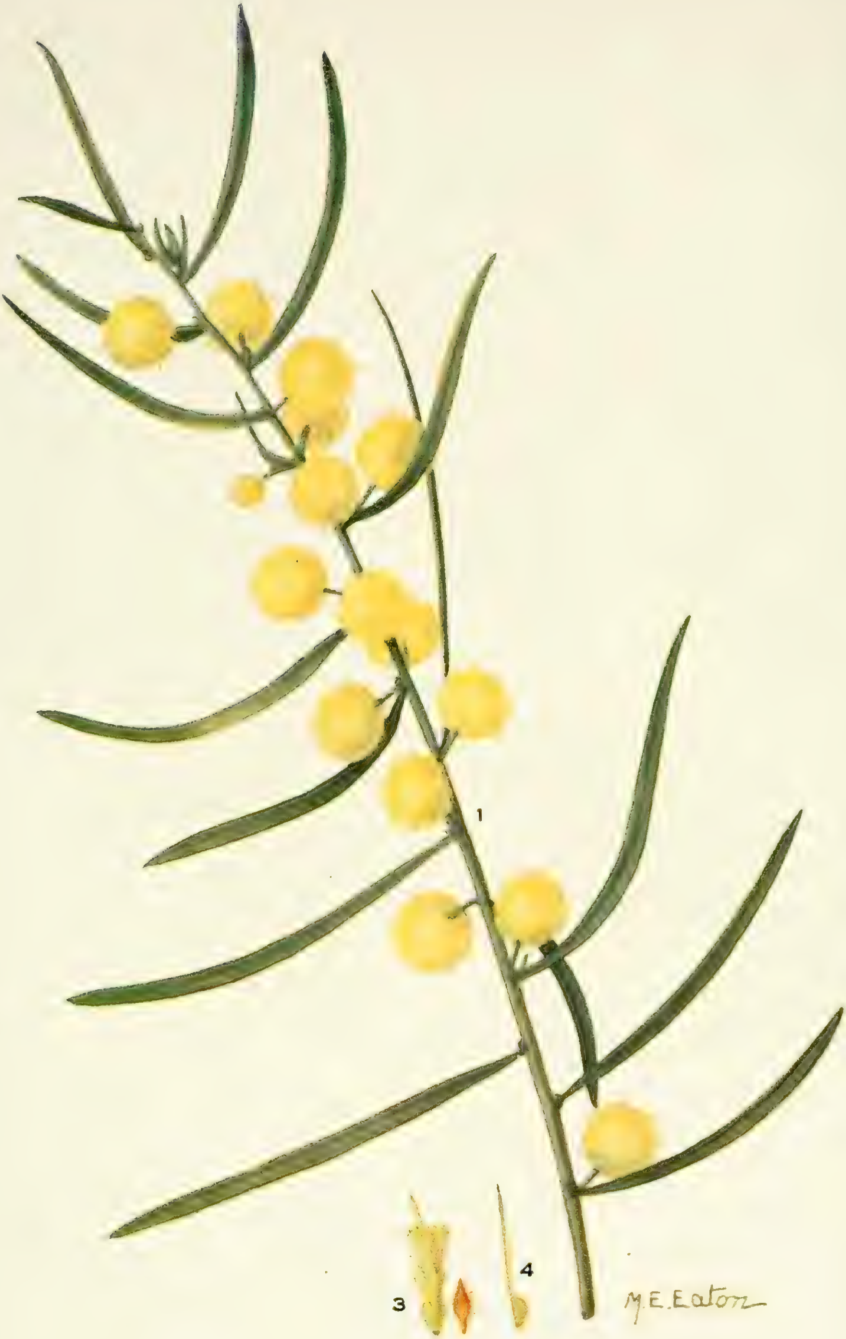
EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Flower, × 4. Fig. 3.—Pistil, × 4. Fig. 4.—Fruit.



ACACIA LEPROSA

(Plate 196)

ACACIA LEPROSA

Climbing Acacia

Native of New South Wales and Victoria

Family MIMOSACEAE MIMOSA Family

Acacia leprosa Sieber; DC. Prodr. 2: 450. 1825.

Here is an acacia which makes an excellent plant for training on a column or against a wall in the cool house. The long slender branches have a decided drooping habit, breaking away from the main stem at a right angle with the upper part bending down in a willowy manner; in bloom the whole plant presents an appearance of wonderful grace and beauty. Quite in contrast with the more sturdy and bushy forms, it is a striking object in the conservatory. Specimens of this will be found in the central display house, range 2, New York Botanical Garden; the illustration was prepared from one of these.

The climbing acacia is a tall shrub, more or less glutinous, with pendulous slender branches which are glabrous or sometimes minutely pubescent when young. The phyllodes, standing out at nearly a right angle to the stem, are linear, sometimes somewhat falcate, up to three inches long and an eighth of an inch wide; the apex is acute or obtuse, with a short curved point, the base narrowed. The orange flower-heads, unusually large, are globose; they are on hairy stalks about equaling their own diameter, and occur solitary or in clusters of two or three in the axils of the phyllodes. The flowers usually have five sepals and five petals, the former about a half as long as the latter which are united to the middle. The flat pod is usually falcate, under a quarter of an inch wide, and has the oblong seeds placed longitudinally.

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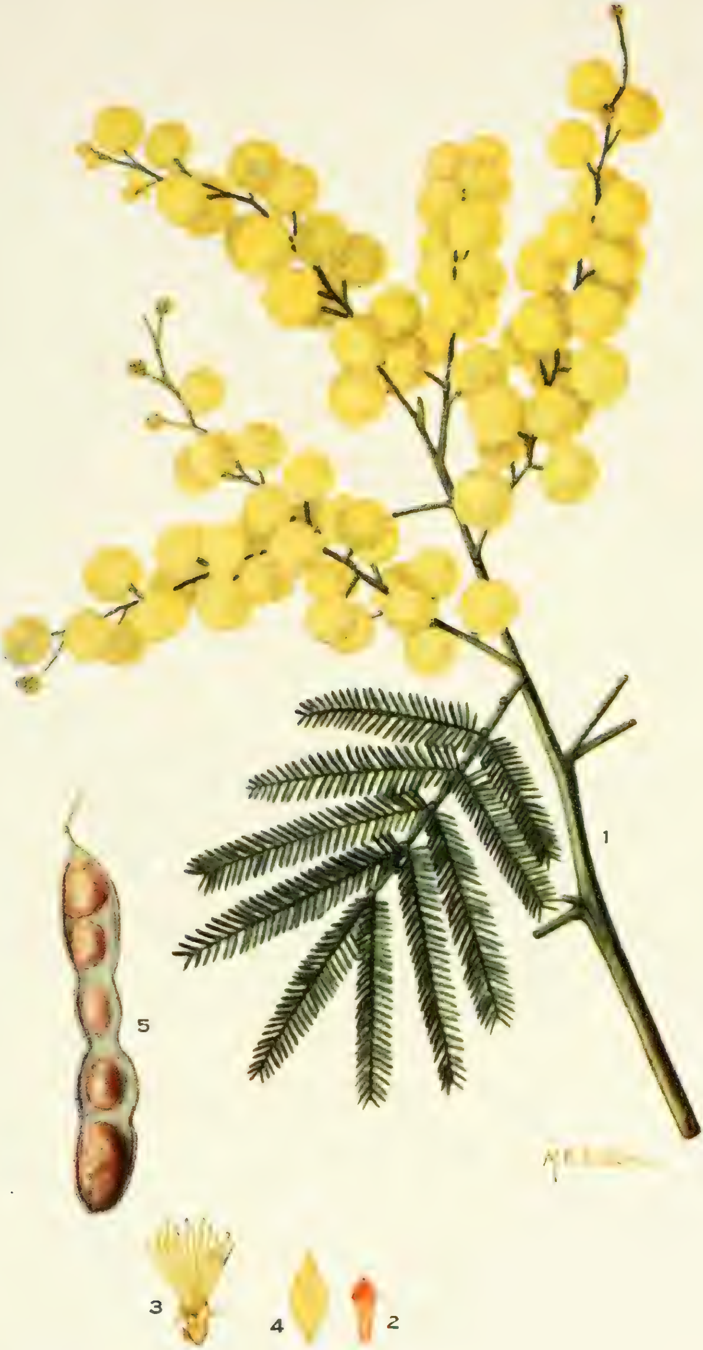
EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Bract, × 4. Fig. 3.—Flower, × 4. Fig. 4.—Pistil, × 4.



ACACIA NABONNANDI

(Plate 197)

ACACIA NABONNANDI

Nabonnand's Acacia

Garden Hybrid

Family MIMOSACEAE MIMOSA Family

This acacia is a garden hybrid, so I am informed by Mr. Louis Dupuy, from whom the plant in the New York Botanical Garden was secured, and was produced by crossing *Acacia dealbata* and *A. decurrens:* I was also informed by him that it originated on the littoral of the Mediterranean. M. Nabonnand, for whom the plant was named, was a noted rosarian who produced many new roses; he died in January, 1903, in his seventy-sixth year. This hybrid requires the treatment accorded to plants in a cool greenhouse. The specimen in the collection of the New York Botanical Garden, from which the illustration was prepared, is in the central display house at range 2.

Nabonnand's acacia is a shrub, open and rather lanky in habit, the branches usually more or less hairy. The bipinnate leaves are up to five inches long and four inches broad, and have commonly from five to seven pairs of pinnae, the larger one and a half to two inches long and a half to three-quarters of an inch broad, the rachis commonly more or less hairy. The pinnae have from fifteen to thirty pairs of glabrous leaflets, at nearly a right angle to the rachis, a quarter to three eighths of an inch long; they are linear, falcate, and obtuse or acutish and apiculate at the apex. The bright yellow flower-heads are three sixteenths to a quarter of an inch in diameter; these are on short stalks about an eighth of an inch long and are arranged in rather loose ascending racemes, two and a half to four inches long, which arise from the axils of the upper leaves. The pod is about two inches long and nearly three eighths of an inch wide, and is somewhat curved, having the seeds placed longitudinally.

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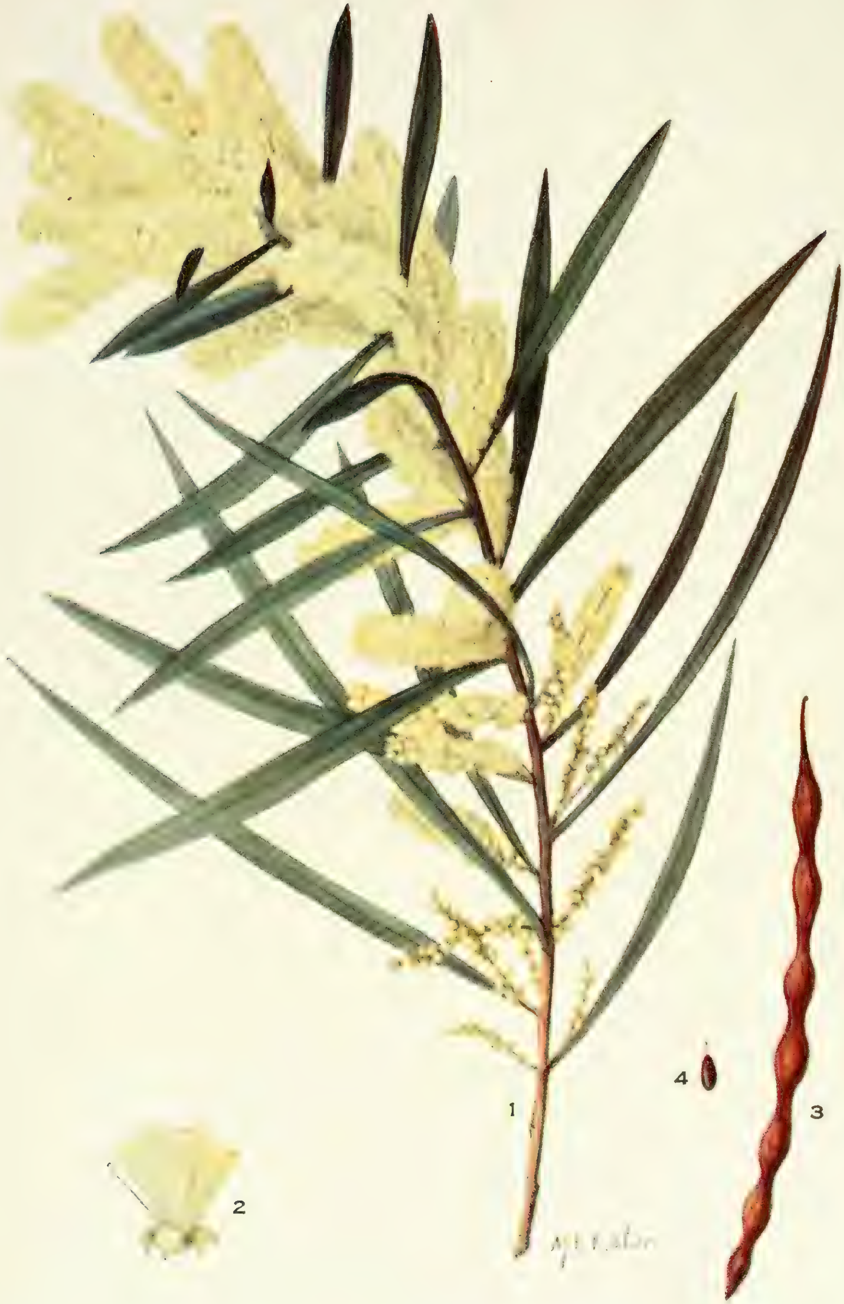
EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Bract, × 8. Fig. 3.—Flower, × 4. Fig. 4.—Petal, × 8. Fig. 5.—Fruit.



ACACIA LONGIFOLIA FLORIBUNDA

(Plate 198)

ACACIA LONGIFOLIA FLORIBUNDA

Narrow-leaved Sidney Golden Wattle

Native of New South Wales and Victoria

Family MIMOSACEAE MIMOSA Family

Acacia floribunda Willd. Sp. Pl. **4**: 1051. 1806.
Acacia longifolia floribunda F. Muell.; Benth. Fl. Austral. **2**: 398. 1864.

This is one of the best of the acacias, both for cultivation as a flowering plant and for cut bloom. It forms a graceful shrub, with slender curved or somewhat drooping branches which bear in the axils of the phyllodes a great abundance of pale yellow blossoms, arranged in cylindric spikes instead of globose heads, as is the case in the other species illustrated here. In full bloom it is one of the most showy and attractive plants for the cool conservatory, either planted out or in pots. Its flowers have a delightful fragrance, a fragrance which is evident but not obtrusive, perfuming the air for a considerable distance. In the central display house, range 2, New York Botanical Garden, there are fine specimens of this acacia planted out; they form a striking feature in the large collection of acacias there. The illustration was prepared from one of these.

The narrow-leaved Sidney golden wattle is a shrub, or more rarely a small tree, with the foliage at the ends of the glabrous, curved, or somewhat drooping branches. The phyllodes, which are placed at an acute angle to the stem, are commonly two to four inches long, rarely longer, and a quarter of an inch wide or less; they are glabrous, elongate linear-lanceolate, narrowed at both ends, and are distinctly nerved and more faintly reticulate. The pale yellow flowers are borne in dense ascending spikes, one to one and a half inches long, which arise from the axils of many of the upper phyllodes. The pods are about three inches long and three sixteenths of an inch wide, somewhat curved, and strongly constricted between the seeds, which are oblong and placed longitudinally.

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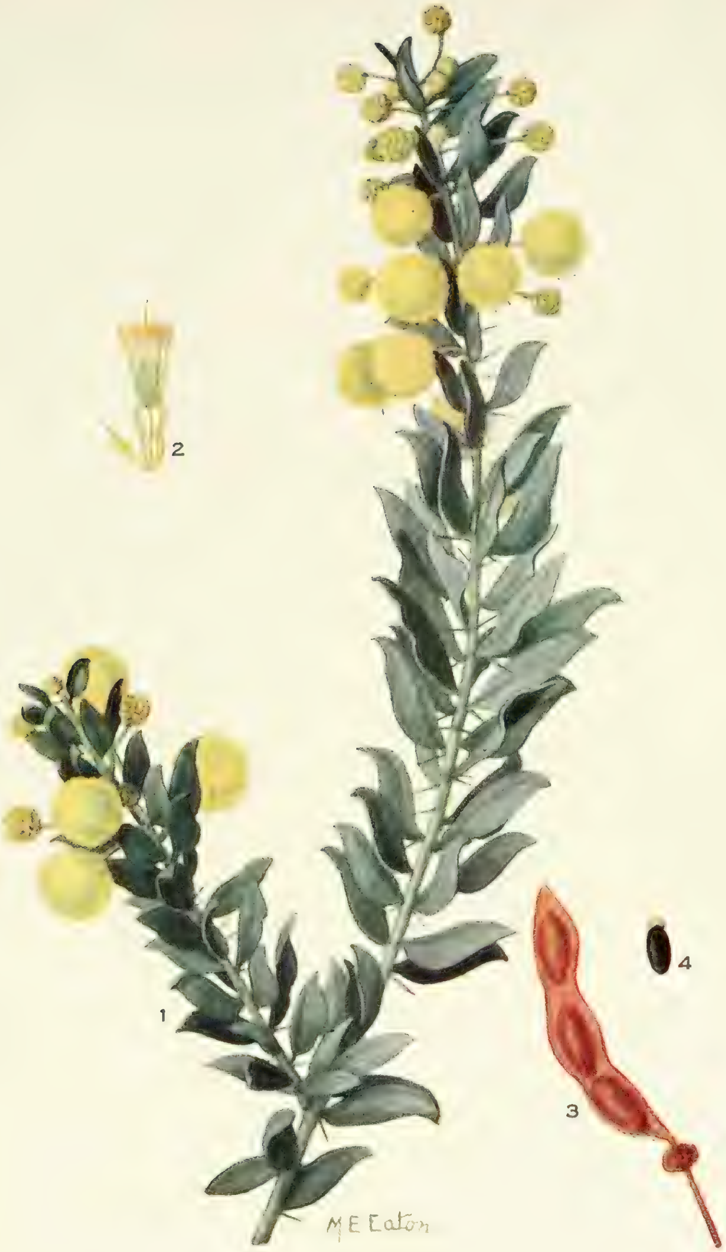
EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Flower, × 5. Fig. 3.—Fruit. Fig. 4.—Seed.



ACACIA ARMATA

(Plate 199)

ACACIA ARMATA

Kangaroo Thorn

Native of southern Australia

Family MIMOSACEAE MIMOSA Family

Acacia armata R. Br.; Ait. Hort. Kew. ed. 2. 5: 463. 1813.
Acacia paradoxa DC. Cat. Hort. Monsp. 74. 1813.

A plant of dense habit, with the breadth usually greater than the height, and the foliage of a deep rich green. It makes an excellent plant for the cool conservatory, and is one of the best for pot culture, flowering when comparatively small, its rich green foliage making a fine contrast with the bright yellow of its blossoms. It is much grown for the Easter display. This acacia has been in cultivation a long time, having been introduced in 1803 by Peter Good. There are fine specimens of this, planted out, in the central display house, range 2, New York Botanical Garden, and it is from one of these that the illustration has been prepared.

It is said to make a good hedge-plant in regions where it may be grown in the open, and has been employed to reclaim sand dunes.

The kangaroo thorn is a dense shrub of widely spreading habit, the branches somewhat hairy, and bearing stipular thorns, about a quarter of an inch long, at the base of the phyllodes. The ascending phyllodes are unequally elliptic or elliptic-ovate, a half an inch to an inch long and a quarter of an inch to a little more wide; they are a rich dark green, apiculate at the apex, with one nerve, nearer the upper margin, and several lateral nerves arising therefrom. The globose flower-heads are a quarter to three sixteenths of an inch in diameter, and are borne solitary on stalks three eighths to three quarters of an inch long. The sepals and petals are five, the former about half as long as the latter. The pods are straight or somewhat curved, one and a half to two inches long and three sixteenths to a quarter of an inch wide. The seeds are oblong and placed longitudinally.

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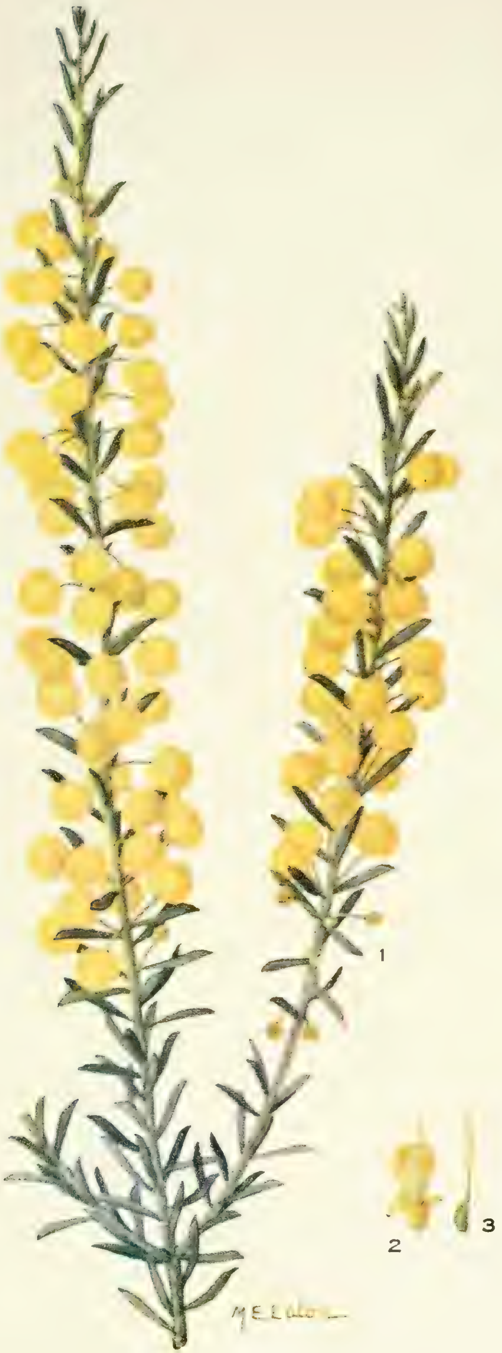
EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Flower, × 4. Fig. 3.—Fruit. Fig. 4.—Seed.



ACACIA LINEATA

(Plate 200)

ACACIA LINEATA

Narrow Line-leaved Acacia

Native of southeastern Australia

Family MIMOSACEAE MIMOSA Family

Acacia lineata A. Cunn.; G. Don, Gen. Syst. 2: 403. 1832.
Acacia runciformis A. Cunn.; G. Don, Gen. Syst. 2: 404. 1832.
Acacia dasyphylla A. Cunn.; Benth. Lond. Journ. Bot. 1: 359. 1842.

This is a shrub of rather low bushy habit, with slender hairy branches, and globose flower-heads borne in great abundance toward the ends of the branches. It is quite in contrast with the other species illustrated here, the short narrow phyllodes and the myriads of small flower-heads giving it an especially dainty and delicate appearance. It may be grown as a pot plant or planted out, in either case a charming shrub. There are well-developed specimens of it in the central display house, range 2, New York Botanical Garden; from one of these the illustration was prepared.

The narrow line-leaved acacia forms a bushy shrub with slender hairy branches. The hairy phyllodes, which have a curved apex and are narrowed at the base, are a half to three quarters of an inch long and about a twelfth of an inch wide; the margins are thickened and there is a longitudinal nerve near the upper margin. The bright yellow flower-heads, an eighth to three sixteenths of an inch in diameter, are solitary on slender glabrous stalks a quarter to a half inch long; there may be one or sometimes two or three in the axils of the upper phyllodes. The sepals and petals are five, the former distinct. The linear pods are curved, and are an eighth to a sixth of an inch wide.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Flower, × 5. Fig. 3.—Pistil, × 5.

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ADDISONIA

COLORED ILLUSTRATIONS
AND
POPULAR DESCRIPTIONS
OF
PLANTS

VOLUME 6 NUMBER 2

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ADDISON BROWN FUND

"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonomy, and a brief statement of the known properties and uses of the plants illustrated."

The preparation and publication of the work have been referred to Dr. John H. Barnhart, Bibliographer, and Mr. George V. Nash, Head Gardener.

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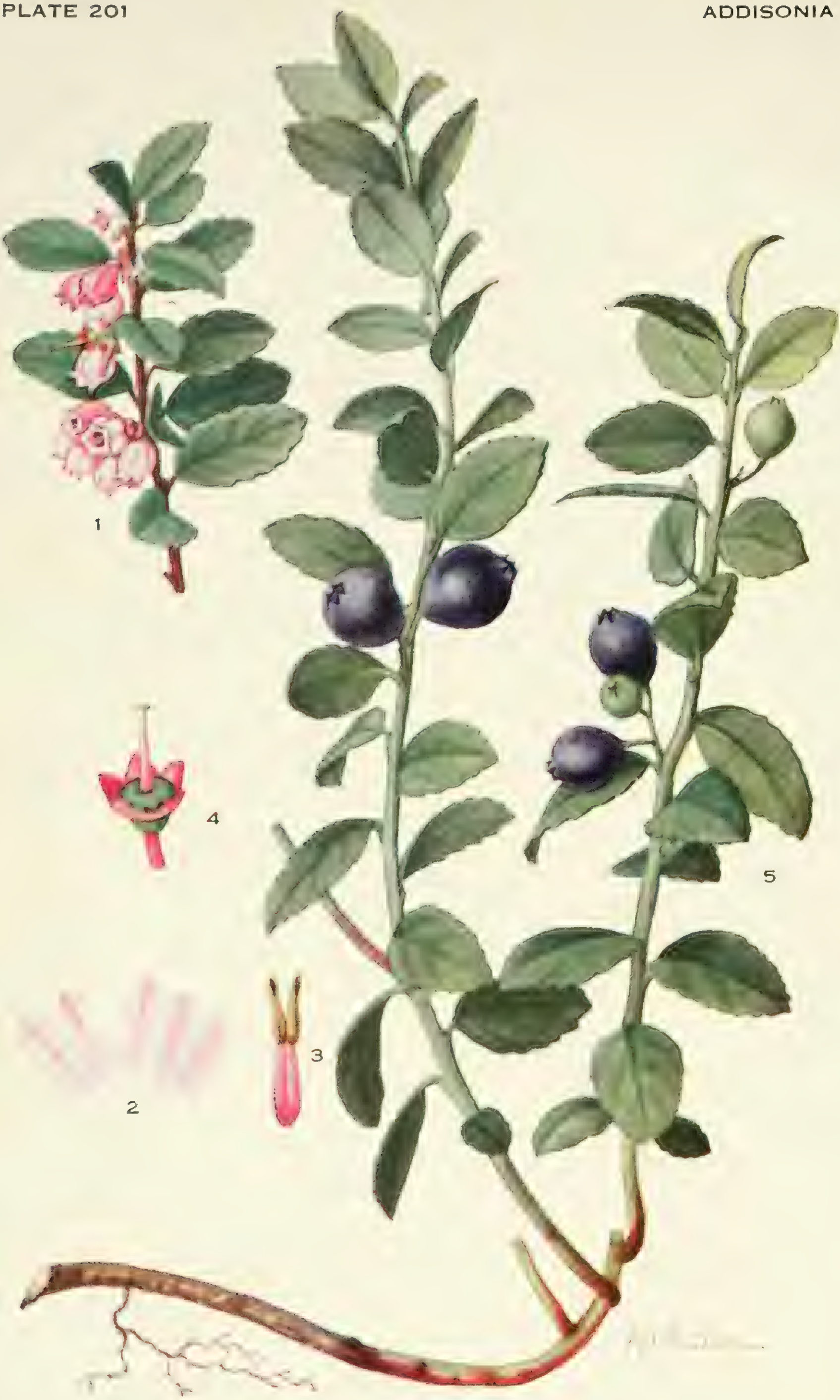
GEORGE VALENTINE NASH

One of the editors of this journal from its establishment, died in New York City, July 15, 1921



GAYLUSSACIA BRACHYCERA

(Plate 201)

GAYLUSSACIA BRACHYCERA

Box-huckleberry

Native of eastern Pennsylvania, eastern Maryland, and Delaware

Family VACCINIACEAE HUCKLEBERRY Family

Vaccinium brachycerum Michx. Fl. Bor. Am. **1**: 227. 1803.
Vaccinium buxifolium Salisb. Parad. Lond. *pl. 4.* 1806.
Gaylussacia brachycera A. Gray, Mem. Am. Acad. II. **3**: 54. 1846.

Some of our native plants, both genera and species, seem to be on the verge of extinction. The box-huckleberry was doubtless more abundant in the past; it scarcely could have been less so. At present, only four plants are known in the wild state. Whether unfavorable meteorologic or pyric conditions or very destructive organic epidemics, resulted in its decrease, we shall never know.

The several plants referred to above vary in size from a few square feet to many acres in extent. The growth is apparently connected under ground and each plant is essentially sterile to its own pollen and practically no seedlings are produced in nature. Thus the evidence indicates that the four "colonies" are really four individuals.

The species was discovered in Virginia by André Michaux about the end of the eighteenth century. This locality was not again found; the plant may have been destroyed. About half a century later it was discovered in the mountains of eastern Pennsylvania. This remained the *sine qua non* and a mecca for plant-lovers for about a quarter of a century. Then a second plant was found in the very heart of Delaware—in the Coastal Plain. About the close of another half century, following the passing away of the generation of botanists responsible for the discoveries referred to above, the succeeding generation have added two more plants to the list. One again in the mountains of eastern Pennsylvania, the other again in the Coastal Plain, this time, however, in Maryland, on the western side of Chesapeake Bay.

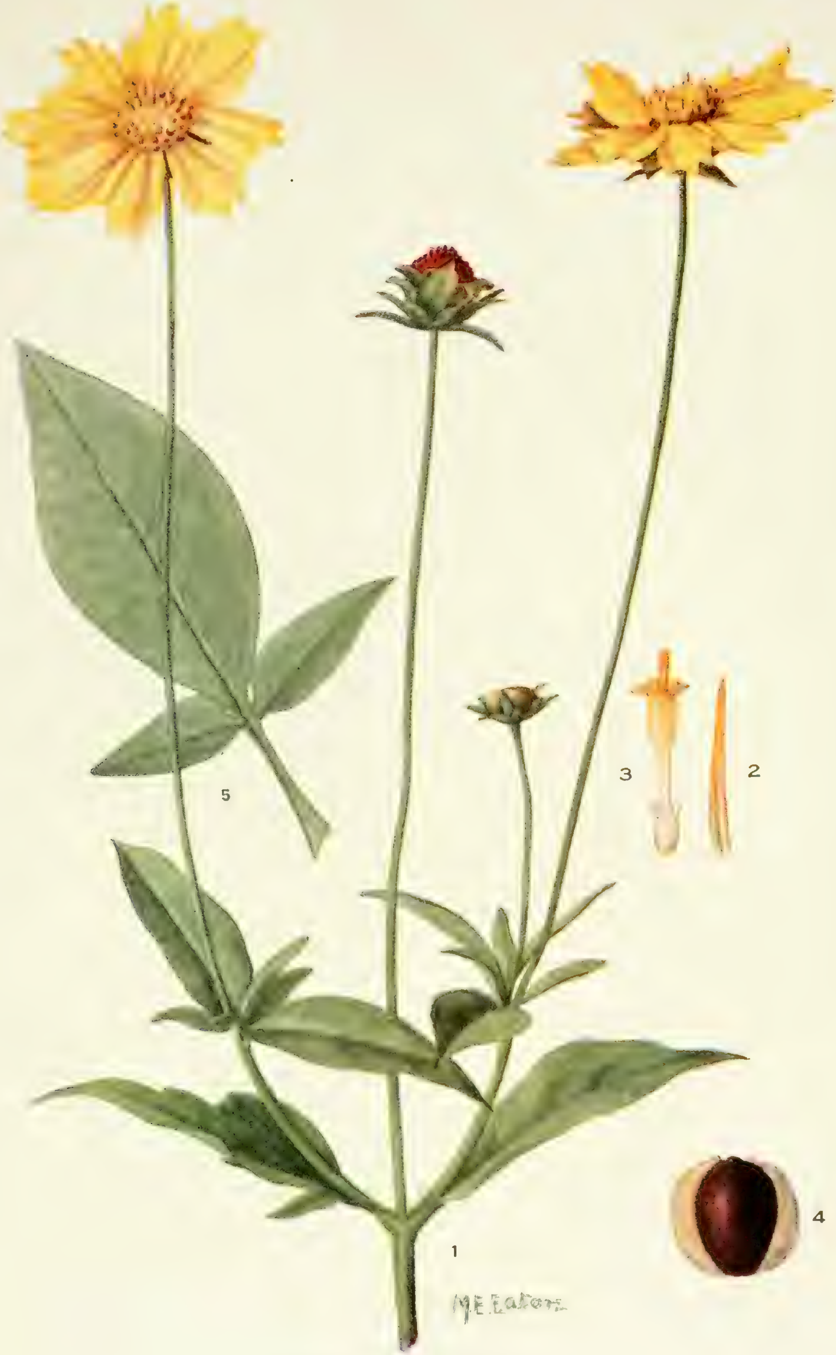
If the box-huckleberry could be successfully cultivated it would supply the most beautiful native evergreen woody ground-cover. Its leaves resemble those of a southern holly—the cassine—and when densely placed in patches or banks of greenery they form a unique ground-cover. The effect of the verdure is greatly enhanced at times, in the spring by the myriads of bright pink flowers and in the summer by the blue fruits. The plant needs an acid for its growth. It thrives best in a humus derived from its own decaying leaves, and it also grows well in a humus derived from decaying oak leaves and from those of related trees.

This beautiful evergreen is a plant of the past, not only as a species, but also from the standpoint of the individual. By calculating the rate of the annual growth the largest plant we are now acquainted with would be several thousand years old. The box-huckleberry thus justly deserves to be called the "Methuselah of the Huckleberries."

The box-huckleberry is a low shrub extensively spreading underground, the branchlets mostly less than a foot tall, branched, the twigs bright green, glabrous, slightly zigzag, with a ridge below each leaf. The leaves are alternate, rather numerous, sometimes distichously spreading, persistent and evergreen. The blades are elliptic to ovate, one inch long or less, usually about three quarters of an inch long, short-petioled, deep green and shining above, pale green and rather dull beneath, obscurely veined on both sides, glabrous, obtuse, shallowly crenate-serrate, with a more or less readily deciduous stipitate gland on each tooth. The flowers are few and several together in sessile or short-stalked panicle-like racemes, in the axils of the upper leaves, usually crowded. The bractlets are scale-like, one twelfth to one sixth of an inch in length, obovate, oval, or ovate, obscurely ciliolate. The hypanthium is glabrous, green and saucer-shaped. The sepals are ovate to orbicular-ovate or deltoid, or triangular-ovate, about one twenty-fourth of an inch long, obtuse or acute, glabrous. The corolla is pink or rarely white, one fourth of an inch long or less, urceolate, angled, glabrous, with the lobes broader than long, obtuse, much shorter than the tube. The ten stamens are erect, included. The filaments are flat, linear, and slightly tapering above the middle, magenta, finely pubescent, at least ciliate, more than one twelfth of an inch long. The anthers are much shorter than the filaments, green, glabrous, with each sac prolonged into a short tubular tip which opens lengthwise. The ovary is depressed, glabrous, inferior. The style is columnar-conic, arising from the depressed cup-like apex of the ovary, expanded into the somewhat disk-like stigma at the apex. The drupe is berry-like, pyriform, about a half inch long or less, or the very late ones much smaller, purple-black beneath the glaucous bloom which somewhat disappears in age, more or less nodding on the short stalk. The pulp is quite juicy and abundant, enclosing ten pale flat seeds which are about one twelfth of an inch long.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Tip of flowering branch. Fig. 2.—Corolla laid open and split between two of the lobes, × 2. Fig. 3.—Stamen, × 5. Fig. 4.—Flower with the corolla removed, × 3. Fig. 5.—Fruiting branch.



COREOPSIS PUBESCENS

(Plate 202)

COREOPSIS PUBESCENS

Star-tickseed

Native of the southeastern United States

Family CARDUACEAE THISTLE Family

Coreopsis pubescens Ell. Bot. S. C. & Ga. **2**: 441. 1823.

Dahlias, tickseeds, bur-marigolds, and cosmos need introduction to scarcely anyone. These closely related plants, although often quite different in aspect, are widely cultivated for ornament and have been, perhaps, for ages.

The genus of the tickseeds—*Coreopsis*—was founded not only on an American plant but on one of the more widely distributed of our numerous American species. The type of the genus—*Coreopsis lanceolata*—curiously enough, is not only the most commonly cultivated tickseed, but it is also the most commonly naturalized one; besides having been scattered in many places from flower gardens, it has been disseminated widely in connection with the planting of lawn-seeds, vegetable-seeds, and the various grains.

The flower-heads of the above mentioned species and those of our subject look alike. The plant here figured, however, has brighter green foliage and broader leaves; its flowers are deeper-yellow. Hence, the name "gold-jacket" which is locally applied to it.

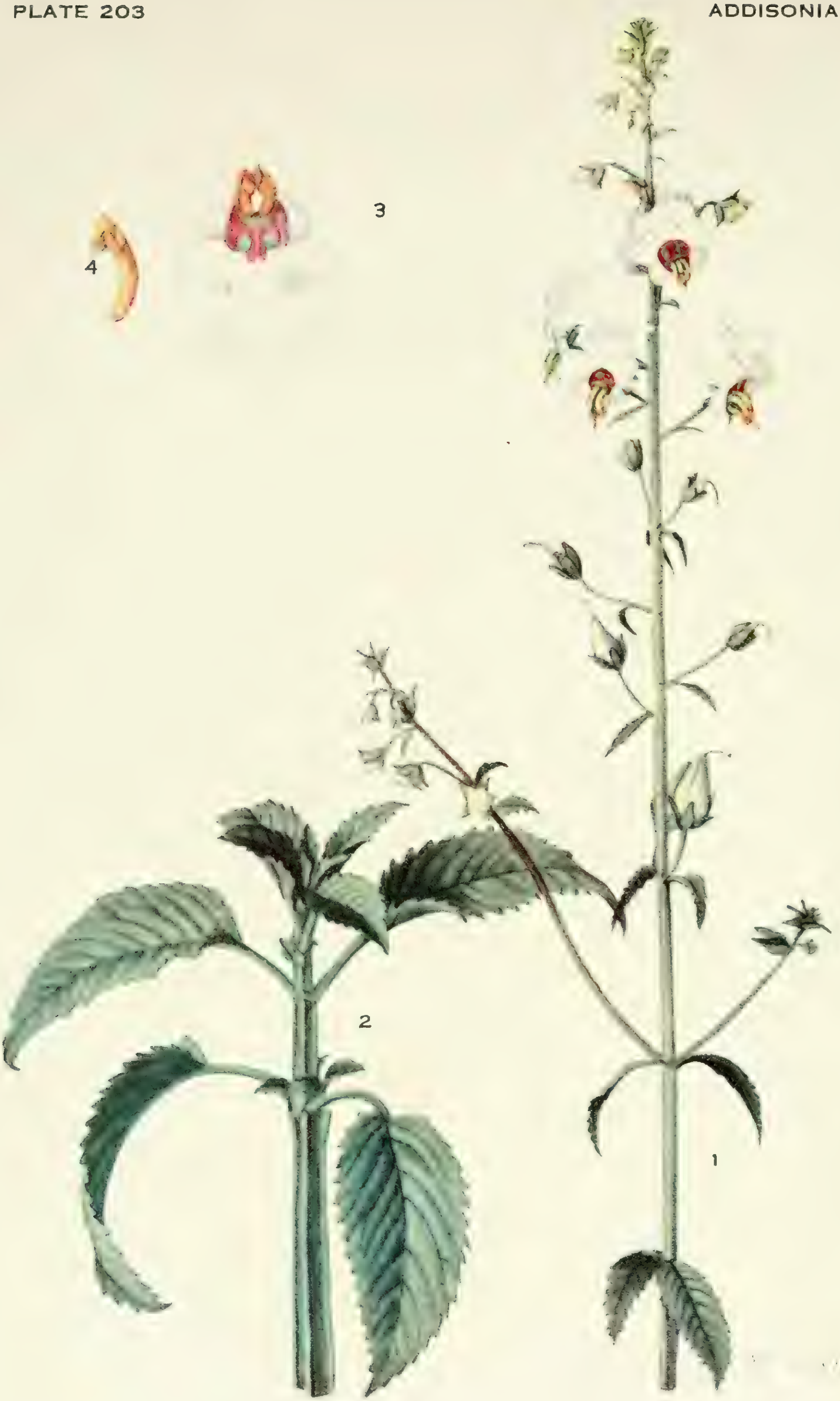
Its habit of growth is often strikingly like that of the everlastings or ladies'-tobacco, *Antennaria*. From a central perennial root-system, stolons are given off radially. This habit is even more pronounced in the other gold-jacket of the south, *Coreopsis auriculata*, known in literature as the running-tickseed. Hence, through the spring and summer in its native haunts we find colony-like patches supporting several or numerous bright yellow flower-heads.

The stoloniferous habit of growth makes this tickseed and the related running-tickseed desirable as a bedding plant and border plant in gardens and one adapted to filling in open spaces. The early green foliage to which the lobing of the leaves lend additional variety, and the protracted flowering season make it very desirable for gardens.

The star-tickseed is a perennial her bspreading freely by stolons. The flowering stems arise from the ends of the stolons; they are leafy and hairy below; naked and hairless or nearly so above, in some of the cultivated forms, where they sometimes branch. The leaves are paired and ultimately distant, the lower ones with long hairy petioles, the upper with short petioles. The blades are typically elliptic, oval, or ovate, entire or with a pair of small basal lobes. The heads are long-peduncled and showy. The bracts of the involucre are various; the outer are linear, linear-oblong, or linear-lanceolate, the inner are ovate-lanceolate to ovate. The bractlets on the receptacle are narrow, but wider and thinner at the base than at the apex. The ligules are yellow, cuneate, spreading, three-lobed near the tip, with the middle lobe notched. The disk-flowers are more numerous than those of the ray, with the tube of the corolla and the throat about equal in length. The corolla lobes are deltoid or deltoid-ovate, much shorter than the throat. The achene is oval or obovoid, with the incurved margins bordered by narrow slightly involute thin pale wings.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Top of flowering stem. Fig. 2.—Bractlet of the receptacle, × 3. Fig. 3.—Disk-flower, × 3. Fig. 4.—Achene, × 5. Fig. 5.—Lower leaf.



ALONSOA CAULIALATA

(Plate 203)

ALONSOA CAULIALATA

White Cascabel

Native of the Andes of Ecuador

Family SCROPHULARIACEAE FIGWORT Family

? *Alonsoa caulialata* Ruiz & Pavon, Syst. Fl. Peru. & Chil. 152. 1798.

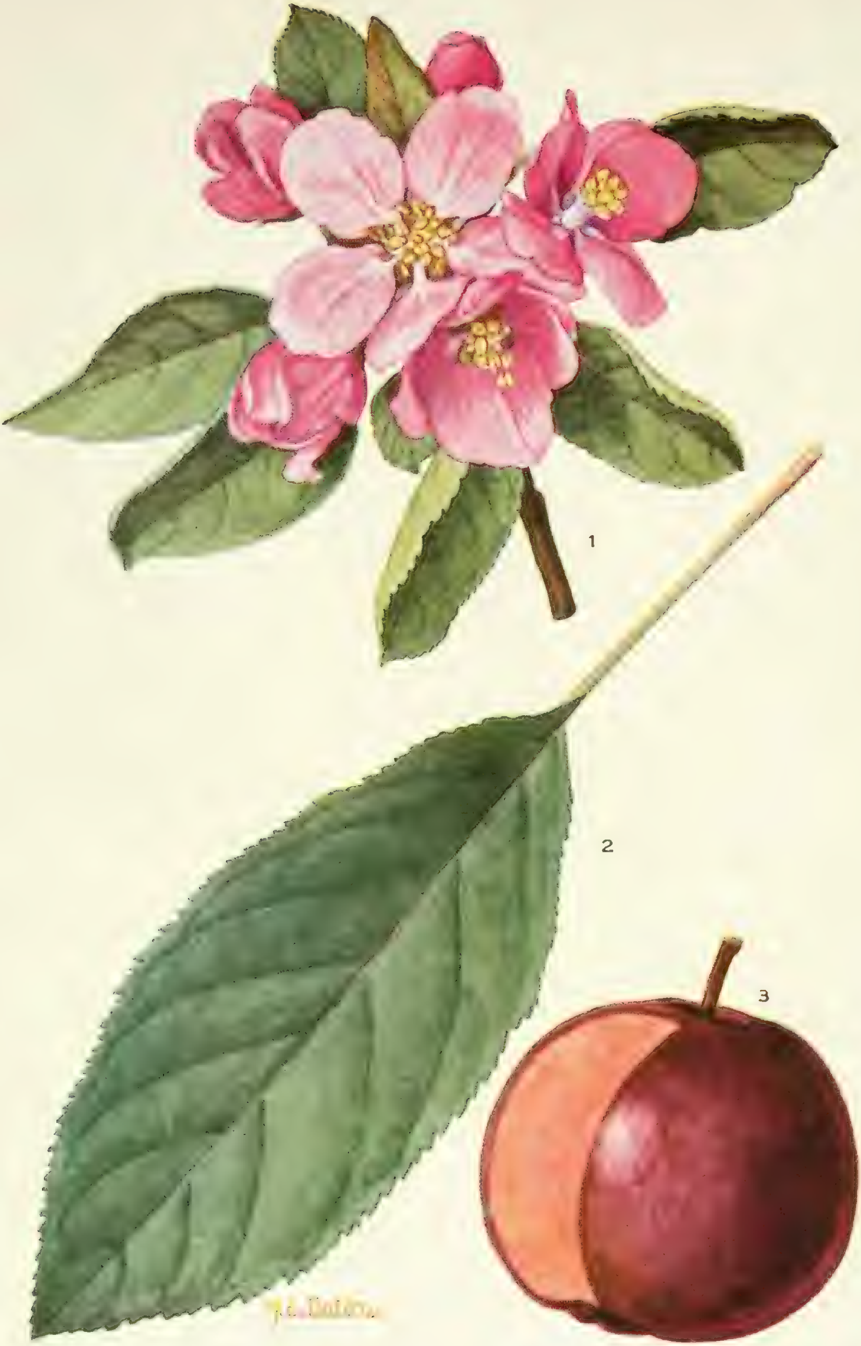
The white cascabel of Ecuador is a near relative of the orange cascabel of Colombia already illustrated on our plate 150. Indeed dried specimens of the two seem very like, but my acquaintance with other plant-groups of the geographically isolated upper slopes of the Andes in the two countries made me expect and seek carefully for distinctions between them. In contrast to *Alonsoa meridionalis*, Ecuador specimens have leaves more uniformly serrate, stem more winged below and finely glandular-pubescent above, anthers less expanded, style longer, and the capsules slightly longer and more tapering. Seeds taken from a specimen collected at Tixán, Ecuador, August 23, 1918, by Dr. J. N. Rose (his no. 22310), were sown in our greenhouse, and in due course the discovery was made that the flowers of the Ecuador species are white. So we have a considerable wealth of contrast between species which have had a long separate evolution on similar cool upper slopes of two isolated portions of the Andean chain.

For the white cascabel I am using provisionally the name of Ruiz and Pavon based upon collections made near Lima in central Peru, but as the cool uplands of Peru are isolated from those of Ecuador by a low forest-belt I expect that future knowledge of the two plants will prove them distinct species. We have but a brief description from Ruiz and Pavon and the name *caulialata*, "winged-stem." The great work of these Spanish explorers, in which they would have both described and figured their discoveries, was interrupted by the Napoleonic troubles and never completed, while their specimens still lie neglected at Madrid. Comparative exploration of the Andean highlands is needed, not alone to solve old puzzles of identification but to show us how diversified has been the course of evolution in such plastic genera as *Alonsoa* and *Fagelia*.

The white cascabel is a perennial nearly glabrous herbaceous plant, its slender stems and branches terminating in long racemes of white flowers. The stems are erect, about two feet tall, four-angled, the sharp angles somewhat winged. The leaves are opposite; their blades are ovate, acuminate, uniformly serrate, slightly paler beneath, and abruptly narrowed to slender petioles. The flowers are borne on slender upcurved pedicels, which like the upper part of the stem bear sparse minute gland-tipped hairs. The sepals, corolla-form, stamens, and pistil are nearly as in *A. meridionalis* (plate 150); however, the corolla is pure white, with three violet-red lines, the filaments bear anthers with less expanded sacs, and the style is slightly longer. The capsule is narrowly pyramidal, one half inch long, and opens near the apex by four slits, which divide both the septum and medianly the outside wall of each cavity. The seeds are small, oval, black, ridged and, escaping through the capsule-mouth, are distributed as described for *A. meridionalis*.

FRANCIS W. PENNELL.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—Apex of shoot. Fig. 3.—Flower, × 2. Fig. 4.—Stamen, × 4.



MALUS NIEDZWETZKYANA

(Plate 204)

MALUS NIEDZWETZKYANA

Niedzwetzky's Apple

Native of southwestern Siberia and Caucasus

Family MALACEAE APPLE Family

Malus Niedzwetzkyana Dieck; Koehne, Deuts. Dendrol. 259. 1893.
Pyrus Niedzwetzkyana Hemsl. Bot. Mag. *pl. 7975.* 1904.

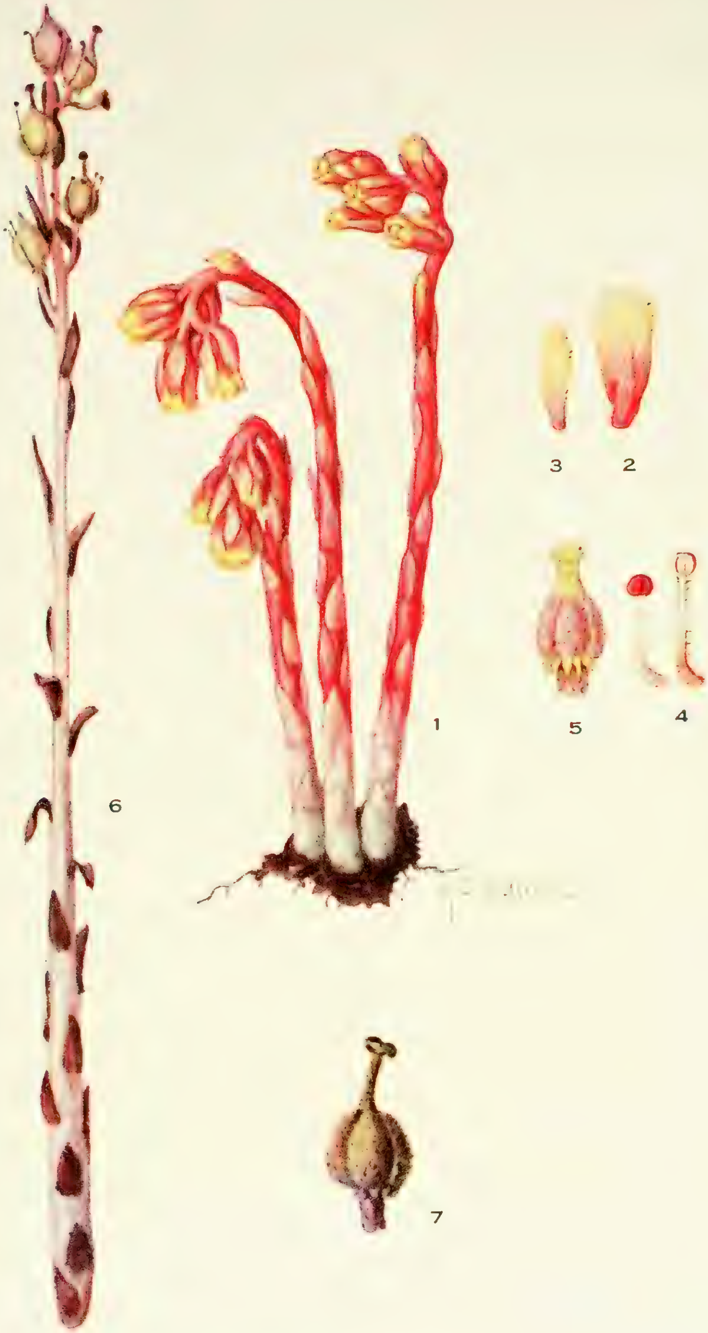
This is a most unusual apple, striking in all its phases, all parts partaking of some shade of red—the bark is very dark purple red, the flowers a deep rose purple, and the fruit a deep crimson purple outside with the flesh of a lighter shade; even the young leaves are purplish, and the mature ones turn red in the autumn. It is a small tree of rather irregular habit, usually attaining a height in cultivation of ten or fifteen feet. In flower or fruit it is an unusually beautiful sight, and is worthy of a place among our most decorative apples.

The tree from which the illustration was prepared is in the arboretum of the New York Botanical Garden, and was secured by exchange with the Royal Gardens, Kew, England, in 1901. Mr. Hemsley in the Botanical Magazine states that the European stock of this tree seems to have been raised from seed of trees cultivated in Kashgar, where it is called "kisil alma," or red apple, on account of the prevailing color of all its parts. It flowered at Kew Gardens in the spring of 1904. Our plant, having been received from Kew, would indicate an origin in the Kashgar region.

Niedzwetsky's apple is a rather small tree of irregular habit, usually ten to fifteen feet high, with the straight flowering branches long and stiff and with the smooth bark a dark purple red. The young leaves usually have a purplish hue, this color being confined later to the petiole and the midrib. The mature leaves have petioles one to two inches long. The blades range from oblong to oblong-lanceolate and lanceolate, are from one to two inches long when young and from three to five inches long and one to two inches wide when mature; they are rather thick, and glabrous except usually for a slight hairiness along the midrib, with the margins rather irregularly serrate; the apex and base are acute. The numerous flowers are one and a half to two inches in diameter, and are clustered at the ends of the short lateral branches, on stalks less than an inch long. The calyx-tube, or hypanthium, is woolly; the lanceolate sepals are about a quarter of an inch long. The petals are obovate or oval, of a deep rose purple. The stamens are longer than the smooth styles. The fruit is conic or globose, one and a half to two inches long, the skin a deep crimson purple, the flesh rose or pinkish purple.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Leaf. Fig. 3—Fruit.



HYPOPITYS INSIGNATA

(Plate 205)

HYPOPITYS INSIGNATA

Crimson Pine-sap

Native of the eastern United States

Family MONOTROPACEAE INDIAN PIPE Family

Hypopitys insignata Bicknell, Bull. Torrey Club **41**: 413. 1914.

Growing from the leaf-mould and decaying vegetable rubbish of deciduous woodland where taller plants and undershrubs abound, the crimson pine-sap would be little noticeable but for its brilliant coloring. A nearly related larger species of similar habit, but of sallow hue, does not quickly take the eye even when exposed on the little occupied open floor of the pine woodlands where it freely grows.

Unlike the multitude of autumn plants whose buds and flowers at length appear after a long period of growth, the flower-buds of this plant are found fully formed when the stem pushes up out of the ground. They are crowded together in an inverted cluster which straightens up as the stem rises higher and the flowers unclose.

The plant has been reported definitely only from the coastal region of Massachusetts and Long Island, although it must have a far wider distribution. It is curiously local, however, in the places where it has been found—a single patch, or one here and there, in wide tracts of woodland which everywhere seem to repeat the very conditions of the particular spot that has brought it to a perfect growth. Its capsules are packed with seeds innumerable, possibly for the very reason that they are not readily spread. They are very minute, and it does not come to mind what may be the agency of their dispersal unless it be the wind. A wind, strong indeed, that might chance to carry seeds to a far distance, could alone effectively reach these lone plants in their protected retreats. The loose extended testa of the seed is light and chaffy, and although the plant is succulent it is of good substance and, dead and brown, remains erect and stiffly upholds its seed-pods throughout the winter.

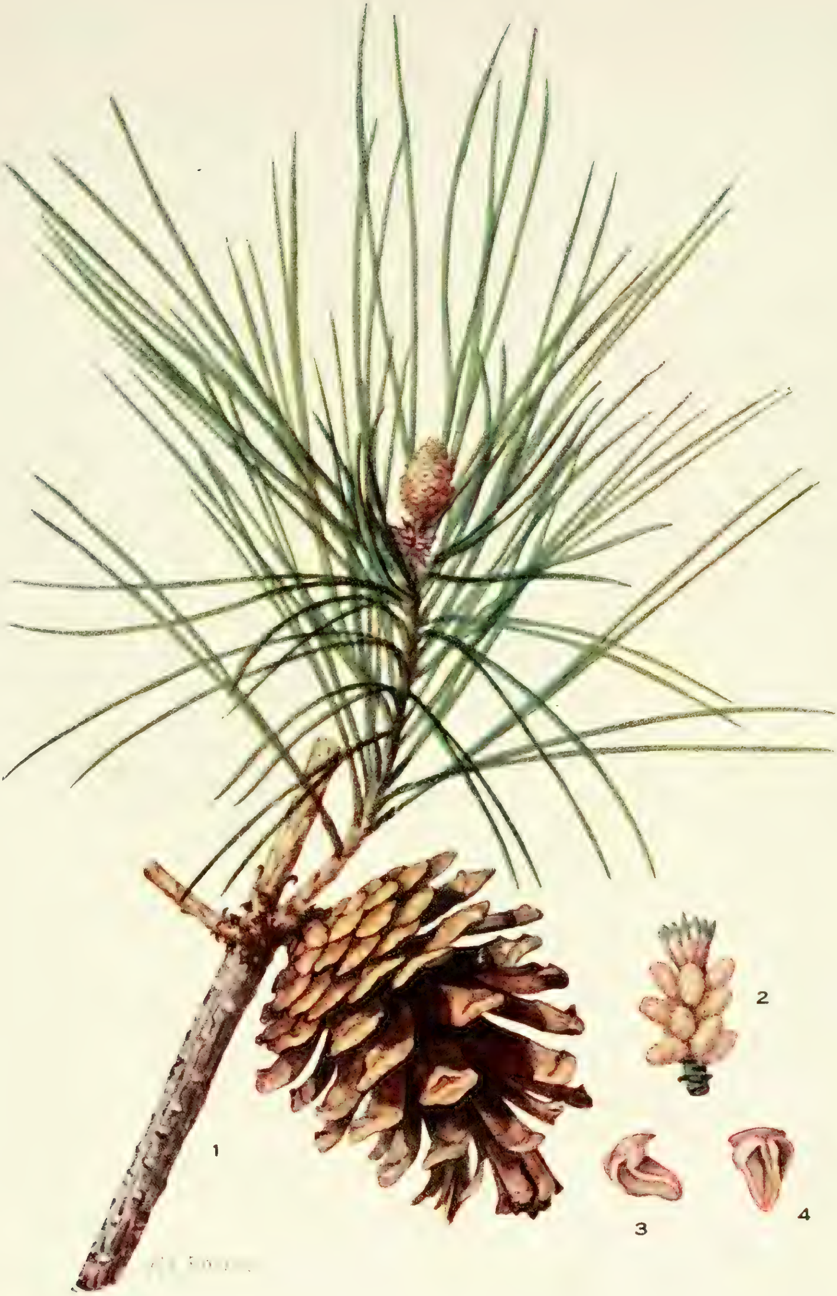
This plant is perhaps our very latest one to break the soil, and its prompt flowers are not brought out until September and October. It inhabits dry oak woodland, but has also been found in rather low ground under red maples. There is a similar plant of shaded hemlock woods that is of an intense dark red color, but of this little is yet known.

The material from which the illustration was prepared was secured by Doctor F. W. Pennell in oak woods at Central Park, Long Island, September 1, 1919.

The crimson pine-sap is a low fleshy saprophyte of clustered growth from a compacted mass of short roots. It is pubescent throughout above the base, downy on the stem and with a somewhat coarser and whitened investiture on the freer vegetative parts, especially on the inner face of the petals. The stems are erect, and, under conditions that seem to meet every need of the plant's development, are often no more than from four to six inches high. They are at first quite evenly cylindric, but become more or less sulcate-striate when dry. The base of the stem is clothed with short overlapping scales and these, less firm of substance and in more open order further up the stem, extend into the inflorescence. The lower scales are broadened and blunt, those higher up lanceolate and often tapering-acute. The inflorescence is a racemose cluster, most often of from four to seven flowers, at first nodding but soon becoming erect. Reduced plants sometimes bear only a single terminal flower. The flowers are about three-eighths of an inch in length, and are borne on downy pedicels which finally equal or a little exceed the length of the flower. The sepals are as many as the petals, or fewer, and like the bracts are sometimes slightly erose-denticulate. The petals are four in number or, in the terminal flower, five. They are oblong or spatulate, and are rounded or somewhat truncate at the distal end and compressed and saccate at the base. The stamens are eight or ten and have slender hairy filaments. The two anther-sacs are reniform, and release the pollen by splitting around to the margin. They are very unequally developed, one of them often appearing to be abortive. The ovary is pubescent and is ovoid in shape, narrowing into a columnar style of about the same length which is also pubescent. The stigma is orbicular and somewhat funnelform, and is rimmed with a dense bearding of white hairs. The capsule is ovoid-globose, about three-sixteenths of an inch high, and is four- or five-lobed; around its base are eight to ten reflexed tooth-like processes alternating with the stamens. The innumerable seeds are minute and subulate, and are somewhat tailed on either end by extension of the loose testa, in appearance suggesting the tailed seeds of a *Juncus*. The plant varies in color from clear pink to carmine and almost scarlet, except the ends of the petals and sepals which are clear yellow.

E. P. BICKNELL.

EXPLANATION OF PLATE. Fig. 1.—Flowering plant. Fig. 2.—Petal, × 2. Fig. 3.—Sepal, × 2. Fig. 4.—Stamens, × 3. Fig. 5.—Pistil, × 2. Fig. 6.—Fruiting stem. Fig. 7.—Fruit, × 3.



PINUS DENSIFLORA

(Plate 206)

PINUS DENSIFLORA

Japanese Red Pine

Native of Japan

Family PINACEAE PINE Family

Pinus densiflora Sieb. & Zucc. Fl. Jap. **2**: 22. 1842.

This pine is found throughout Japan south of Yeso, but in a wild state it seems to be confined to the central mountains, where, on granite and volcanic debris, it forms small areas. Its cultivation has been extensively practised by the Japanese, not only in its normal condition, but it has been dwarfed and forced and trained out of its natural shape into all sorts of odd and curious forms.

Dr. Siebold introduced this interesting pine into Holland, at his nursery at Leiden, in 1854. Its appearance in Great Britain dates from about 1861, when seeds were brought direct from Japan by Mr. James G. Veitch. It is cultivated in the United States to a considerable extent, especially in some of its varieties, certain of which have even more decorative value than the species itself.

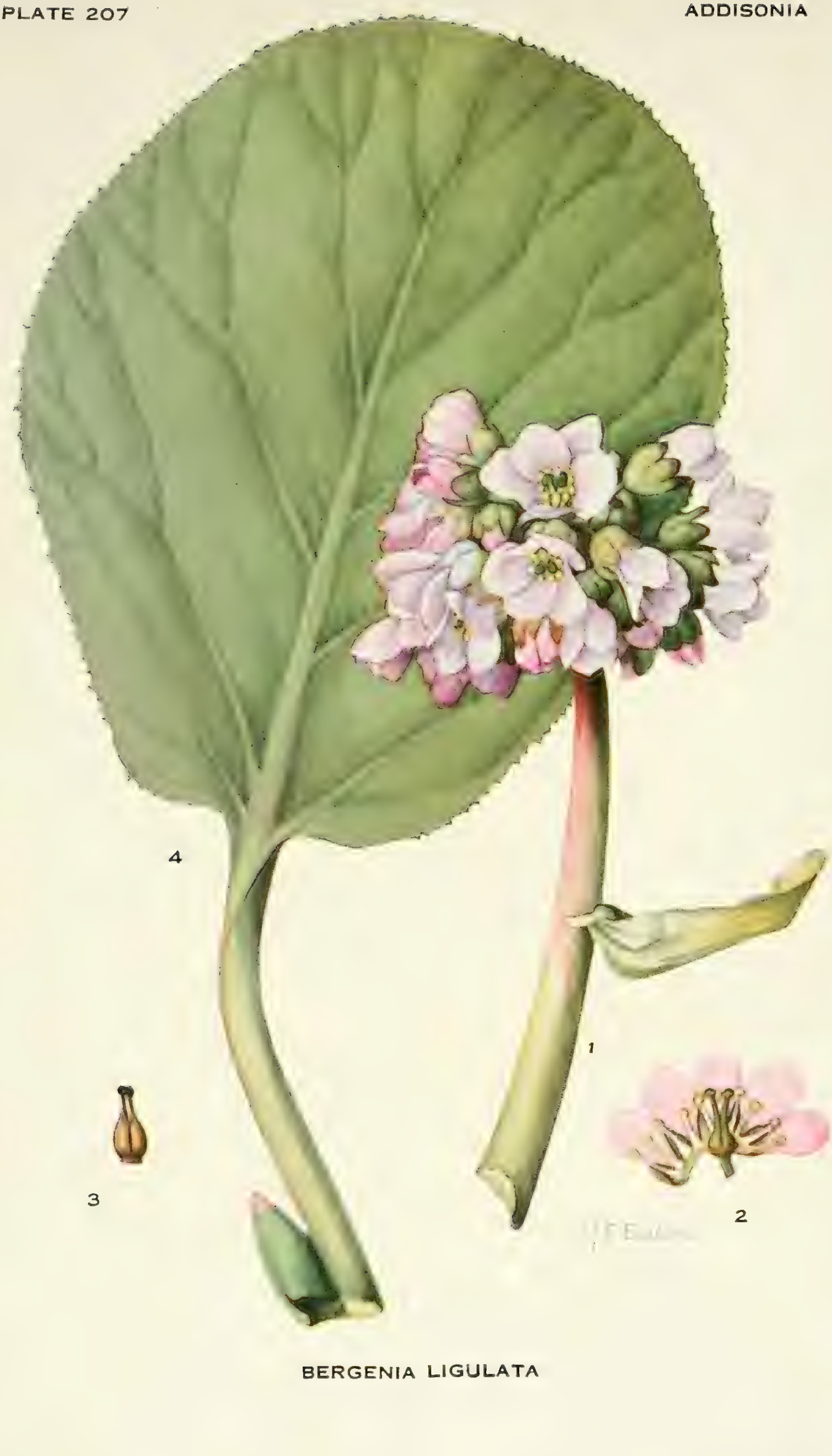
The Japanese have produced many varieties, one of the best of which is known as the Tanyosho pine, the variety *umbraculifera*, which forms a flat-topped tree of dwarf habit, and of great value where dwarf or slowly growing evergreens are desirable. Another variety is *pendula*, with drooping branches. Still other varieties are: *aurea*, with yellow foliage; *albo-terminata*, the leaf-tips yellowish white; *Oculis-draconis*, the leaves marked with two bands of yellow, giving the tufts as seen from above an appearance of alternate yellow and green rings; and *variegata*, in which the leaves are wholly or partly yellowish.

The specimen from which the illustration was prepared has been in the collections of the New York Botanical Garden since 1906, and was part of a large donation of evergreens made to that institution by Mr. Lowell M. Palmer.

The Japanese red pine is said to attain a height sometimes of one hundred feet in its wild state, but in cultivation it is usually of much lower growth, fifteen to twenty feet being its common attainment; its branches are spreading and form an irregular rather open head. The branches are yellow and with a bloom. The winter-buds are oblong-ovate, chestnut-brown. The acute slender leaves are in pairs, of a bright bluish-green, and two and a half to five inches long. The staminate aments are about a quarter of an inch long and occur in dense spikes. The short-stalked cones are of a grayish brown, and about two inches long, with the base somewhat oblique; they are broadly ovate, or sometimes oblong, the scales with a transverse ridge at the summit and a short prickle, or sometimes obtuse.

George V. Nash.

Explanation of Plate. Fig. 1.—Fruiting branch. Fig. 2.—Staminate aments. Fig. 3.—Scale of staminate ament, side view, × 8. Fig. 4.—Scale of staminate ament, front view, × 8.



BERGENIA LIGULATA

(Plate 207)

BERGENIA LIGULATA

Fringe-leaved Saxifrage

Native of the Himalayas

Family SAXIFRAGACEAE SAXIFRAGE Family

Saxifraga ligulata Wall. As. Res. **13**: 398. 1820.
Bergenia ligulata Engler, in E. & P. Nat. Pfl. 3^{2a}: 51. 1890.

The thick-leaved saxifrages, comprising some half-dozen species and several varieties, are some of our best rock garden plants, and should be more widely planted. All of the species serve the same purpose, and their differences are not very well-marked; but our present subject and *B. Stracheyi*, which has pubescent calyces and leaves not distinctly heart-shaped at the bases, have more attractive, cleaner, and healthier leaves, and their flowering scapes when mature stand well above the ground, while some other sorts remain hidden amongst the leaves. *B. ligulata* was introduced into cultivation from Nepal in 1821.

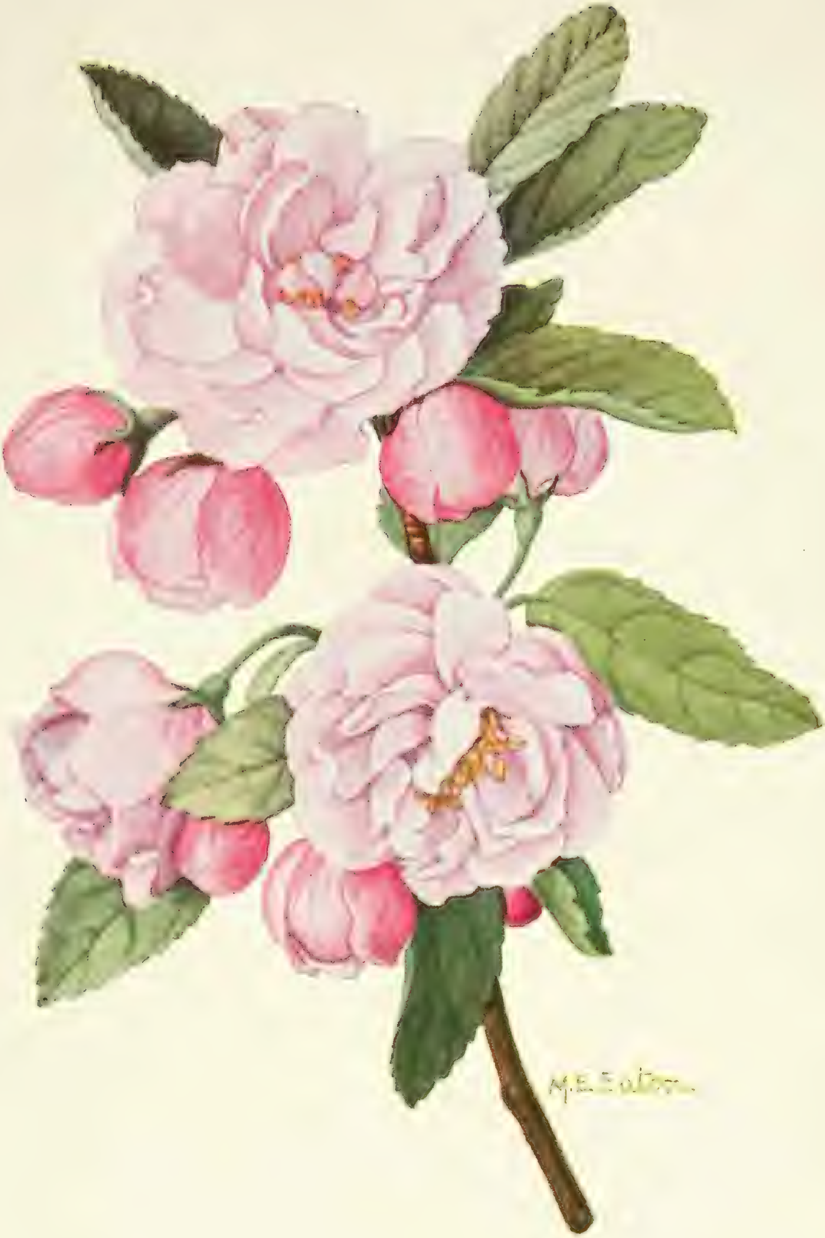
Propagation of these plants is best effected by division of the rootstocks. As border subjects they present bold foliage effects, but do not bloom as profusely as when grown in open rock crevices or pockets in the rockery. They are hardy, and need very little protection in winter. The foliage will not stand a heavy protective covering in early spring, being susceptible to burning at that time.

Our illustration was made from plants growing in the Herbaceous Grounds of the New York Botanical Garden, where they have flourished for several years in rock pockets. In such a location they have flowered profusely, while similar plants in our open flower borders seldom bloom.

The fringe-leaved saxifrage is a plant less than one foot high, spreading by thick rootstocks, from which arise leathery, smooth leaves, with blades from four to eight inches long and nearly as wide, orbicular to obovate in general outline, round at the ends, cordate at the base, entire-margined but fringed rather heavily. The leaf-stalks are nearly as long as the blades, and at their bases are widened into triangular sheaths. The inflorescence is of one-sided clusters on thick scapes which lengthen out as the blooming advances. The pink flowers are nearly an inch in diameter, bell-shaped, with five ovate calyx-lobes united at the base, five rounded clawed petals, ten stamens, a two-celled ovary, and two styles.

KENNETH R. BOYNTON.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—Flower, cut open. Fig. 3.—Fruit. Fig. 4.—Leaf.



MALUS IOENSIS PLENA

(Plate 208)

MALUS IOENSIS PLENA

Bechtel's Crab Apple

Native of Illinois

Family MALACEAE APPLE Family

Malus angustifolia plena Hartwig, Mitt. Deuts. Dendr. Ges. **16**: 268. 1897.
Malus coronaria plena C. K. Schneider, in Silva-Tarouca, Uns. Freil.-Laubg. 264. 1913.
Malus ioensis f. plena Rehder, Mitt. Deuts. Dendr. Ges. **23**: 262. 1914.

This tree is unusual among the crab apples on account of the double flowers which are rose-like, deliciously fragrant, and of a beautiful modulation of pink shades. The tree in full bloom is a charming sight and will adorn any collection. The tree from which the illustration was prepared has been in the arboretum of the New York Botanical Garden since 1908. The species *Malus ioensis* is a native of the middle west. This double variety was found wild and apparently native near Staunton, Illinois, and was introduced into cultivation by the firm of E. A. Bechtel's Sons, of Staunton, about 1891.

Bechtel's crab apple is a small tree, usually under ten feet high, though sometimes becoming taller. The branches of the previous year are of a deep purple and smooth. The leaves have hairy petioles an inch and a quarter long or less. The blades are oblong-elliptic to oval, up to three inches long and an inch broad; the margins are irregularly serrate, and sometimes obscurely lobed, or in those of the young shoots the lobing much more pronounced; the lower surface is tomentose or villous, and the apex and base acute or somewhat obtuse. The double flowers, one and a half to two inches in diameter, are in clusters, the buds globose and of a deep rose-pink, turning to pink when fully expanded.

GEORGE V. NASH.

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ADDISONIA

COLORED ILLUSTRATIONS
AND
POPULAR DESCRIPTIONS
OF
PLANTS

VOLUME 6 NUMBER 3

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A bequest made to the New York Botanical Garden by its late President, Judge Addison Brown, established the

ADDISON BROWN FUND

"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonomy, and a brief statement of the known properties and uses of the plants illustrated."

The preparation and publication of the work have been referred to Dr. John H. Barnhart, Bibliographer, and Mr. George V. Nash, Head Gardener.

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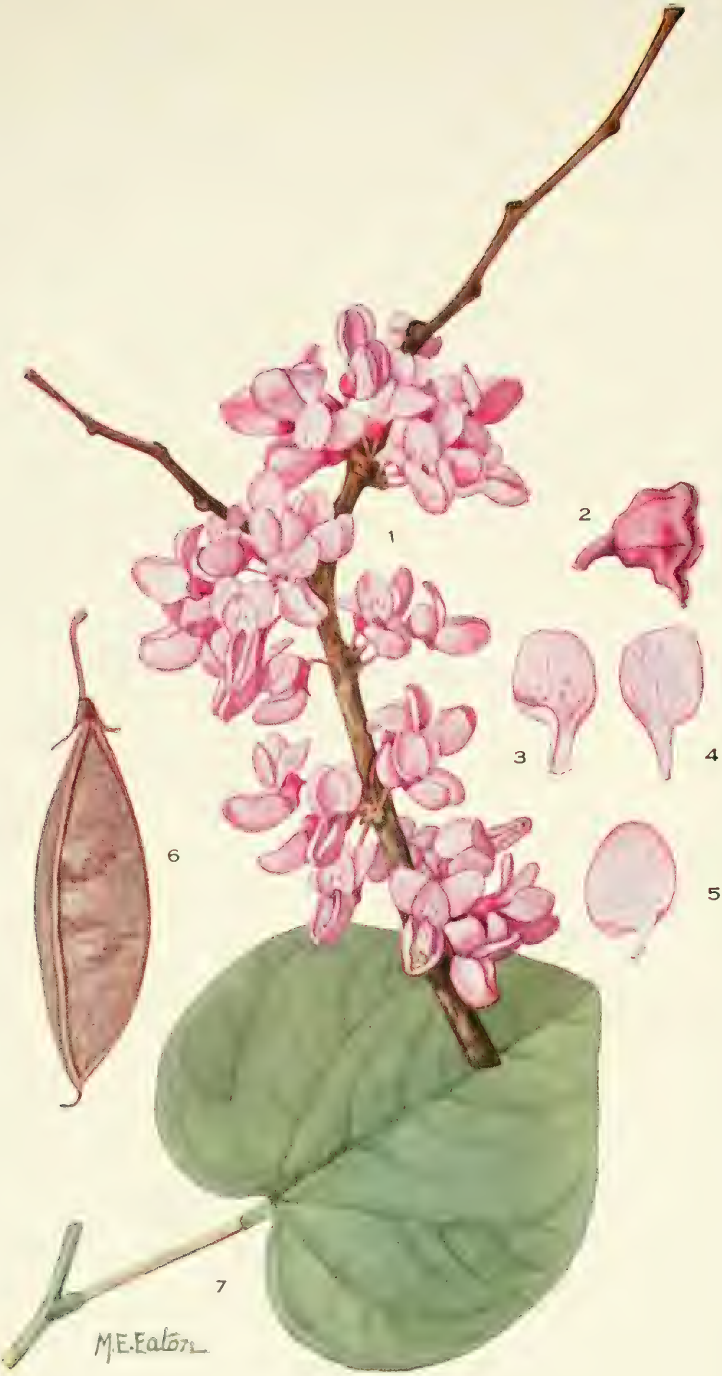
GEORGE VALENTINE NASH

One of the editors of this journal from its establishment, died in New York City, July 15, 1921



CERCIS CHINENSIS

(Plate 209)

CERCIS CHINENSIS

Chinese Redbud

Native of China

Family CAESALPINIACEAE SENNA Family

Cercis chinensis Bunge, Mém. Sav. Etr. St.-Pétersb. **2**: 95. 1835.
Cercis japonica Siebold; Planch. Fl. Serres **8**: 269. 1853.

The redbuds, wherever they grow, both naturally and in cultivation, belong to the first order of conspicuous flowering shrubs or small trees, in early spring. Both our native kind and the imported ones have been favorite shrubs for gardens large enough to accomodate such plantings. The visual effect of the flowering plants, *en masse*, on a wooded hillside is such as to suggest an illumination or a conflagration. This is especially pronounced when the planting is in the partial shade of tall trees. The illusion is more pronounced in the Chinese redbud than in the case of our native species, for the flowers are of a brighter tint, as well as larger, and there is usually more red to impress the eye.

The specimens from which the accompanying plate was made agree with the Chinese plants in the flower, in both size and details, but the leaves have thinner and less glossy blades and the pods are elliptic, instead of linear.

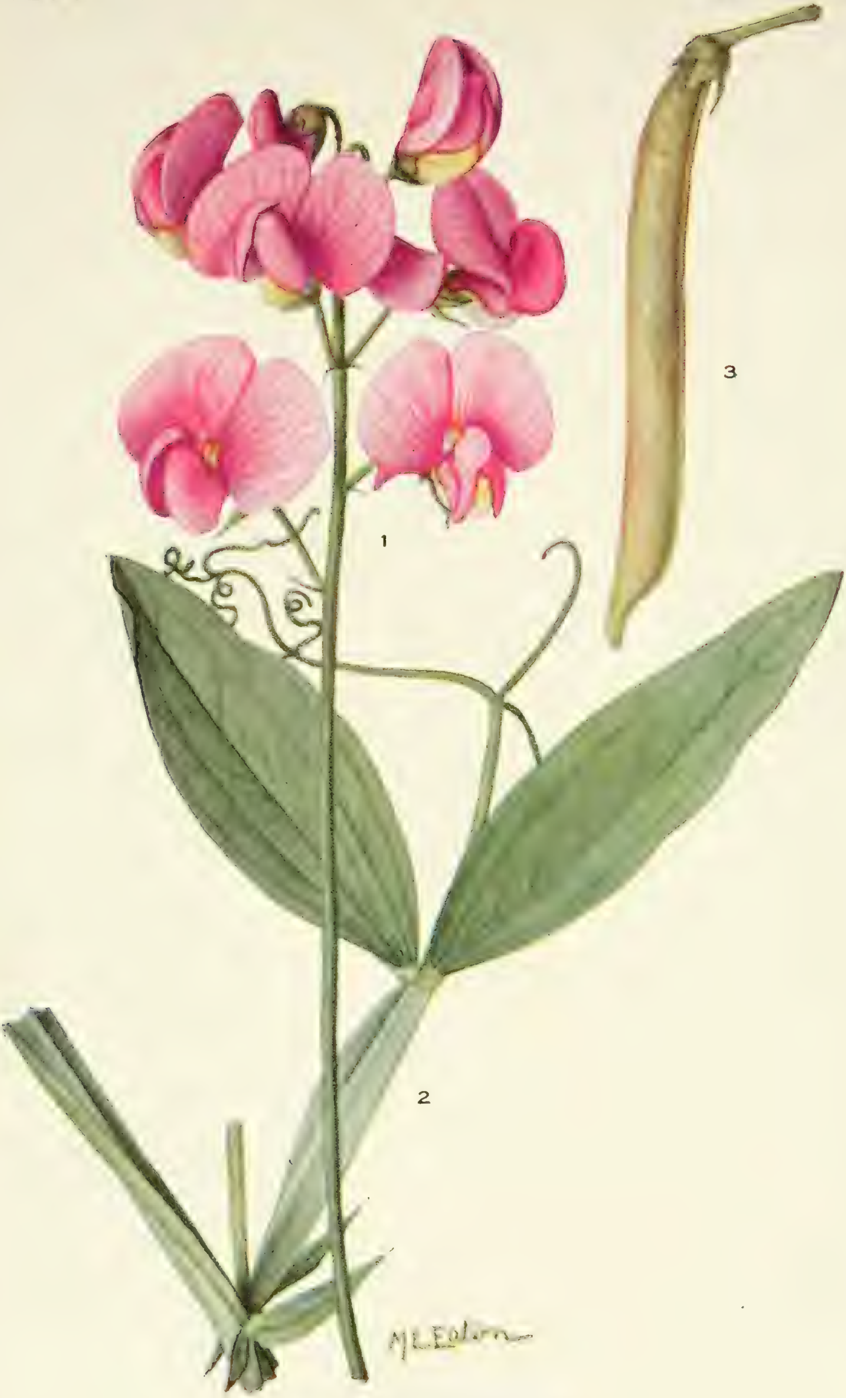
This plant is said to have been first introduced into America from Japan, whence it has been brought into cultivation from China.

The discrepancies in the leaves and fruits may indicate that the plants cultivated in the New York Botanical Garden are of hybrid origin, hence of impure blood, or further study may prove them to represent an undescribed species.

The Chinese redbud is a shrub in cultivation, said to be a tree in its native habitats. The leaves are numerous, with solitary leaflets which are orbicular-ovate to orbicular-reniform, leathery, mostly two and a half to four inches long, cordate at the base, abruptly blunt-tipped or acute at the apex, and rather long-petioled. The flowers appear before the leaves and are borne in contiguous clusters on the branches and branchlets. The calyx is cap-like, somewhat oblique, red or red-tinged, with five broad rounded lobes shorter than the tube. The corolla is deep-pink, about three quarters of an inch long; the keel-petals are slightly larger than the other petals and like the wings uniformly colored; the standard is more or less spotted. The pod is elliptic, one to two inches long, few-seeded, and brownish at maturity.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Calyx, × 2. Fig. 3.—Standard, × 2. Fig. 4.—Wing-petal, × 2. Fig. 5.—Keel-petals, × 2. Fig. 6.—Pod. Fig. 7.—Section of branch with leaf attached.



LATHYRUS LATIFOLIUS

(Plate 210)

LATHYRUS LATIFOLIUS

Everlasting Pea

Native of Europe

Family FABACEAE — PEA Family

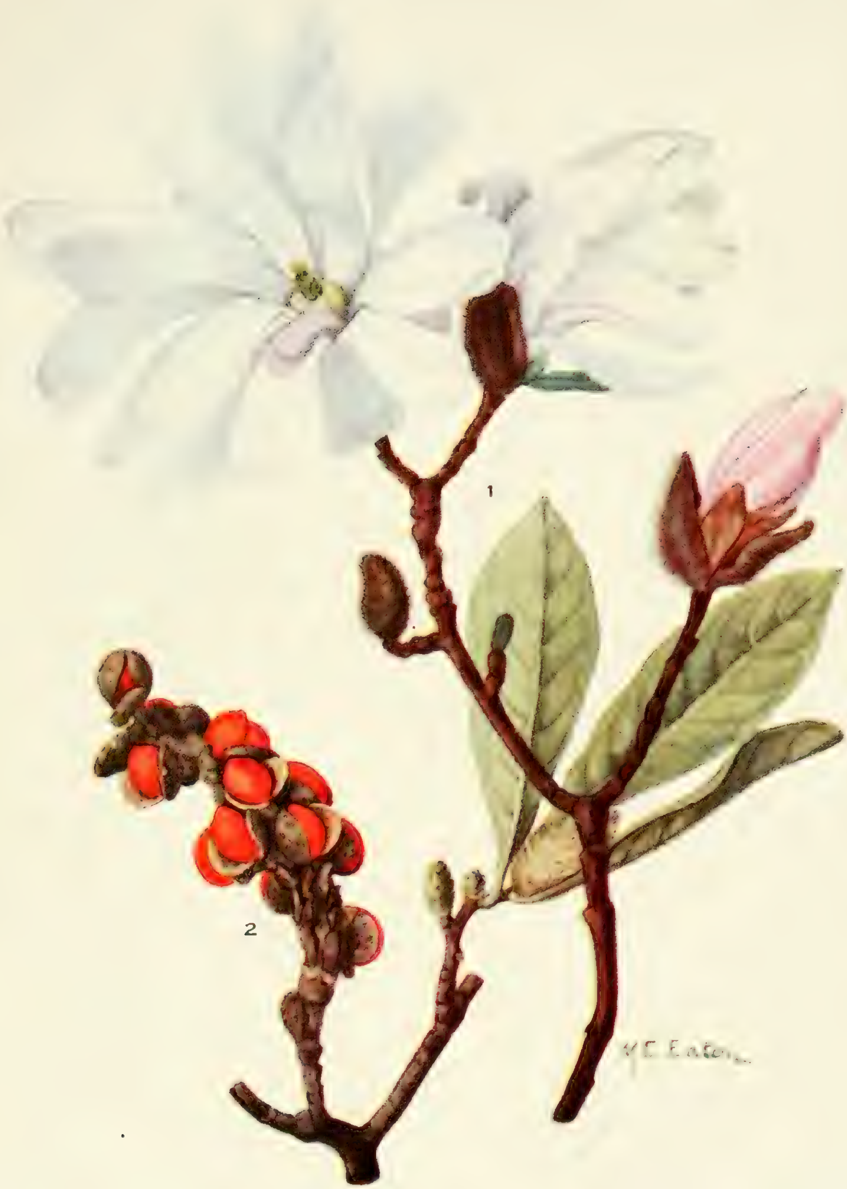
Lathyrus latifolius L. Sp. Pl. 733. 1753.

This attractive climber is frequently grown in flower-gardens, requiring little care and asking only some kind of a support, often forming large masses of interlocking vines several feet in length; this vigor of growth has sometimes to be combated, or the plant will get out of hand. It is quite hardy in the northeastern United States, and is occasionally seen as an escape from cultivation along roadsides from southern New England to Virginia, its seeds probably distributed by birds. The flowers vary considerably in color, and tend to change color in fading. The plant furnishing our illustration was obtained from the Andorra Nurseries in 1913, under the varietal name "Pink Beauty."

The everlasting pea is a smooth herbaceous vine with perennial roots. The stems and branches have conspicuous thin longitudinal wings. The lanceolate pointed stipules are from about half an inch to an inch long; the leaf-stalks are as long as the stipules or longer, and are winged like the stem; there are only two leaflets to each leaf and a slender branched tendril; the leaflets are oblong-lanceolate to elliptic, two inches to four inches long and strongly veined. The flowers are in short racemes at the ends of peduncles usually longer than the leaves and are purple, pink or sometimes white and nearly an inch in length. The pod is nearly straight, a little flattened, tipped, three or four inches long.

N. L. BRITTON.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—Portion of stem and leaf. Fig. 3.—Fruit.



MAGNOLIA STELLATA

(Plate 211)

MAGNOLIA STELLATA

Starry Magnolia

Native of Japan

Family MAGNOLIACEAE MAGNOLIA Family

Buergeria stellata Sieb. & Zucc. Abh. Akad. München. 4^2: 186. *pl. 2A*. 1845.
Talauma stellata Miq. Ann. Mus. Bot. Lugd.-Bat. **2**: 257. 1866.
Magnolia stellata Maxim. Bull. Acad. St.-Pétersb. **17**: 478. 1872.
Magnolia Halleana Parsons, Garden **13**: 372. 1878.

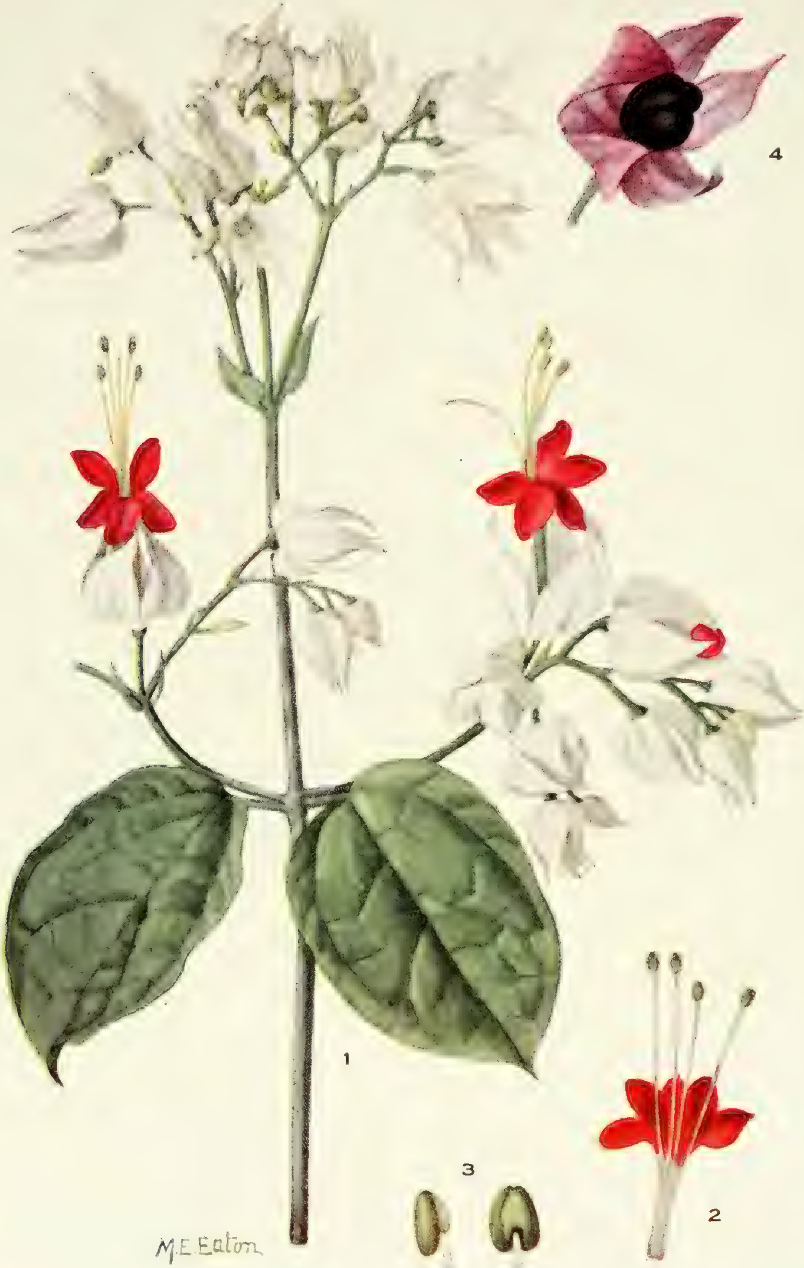
The starry magnolia is a satisfactory species for cultivation, being hardy in New York and New England, but because of its blooming from the middle of April to May it is sometimes caught by late spring frosts. It usually begins to bloom when not more than two feet high, but eventually becomes tree-like. In cultivation it was first known in the United States as *Magnolia Halleana*, a name bestowed by the late S. B. Parsons in honor of Dr. George R. Hall by whom it was introduced from Japan, being delivered to the Parsons' Nurseries at Flushing, Long Island, in or about 1862. *M. Halleana* is an older name than the combination *M. stellata*, but the species was probably not botanically described under that name before the publication by Maximowicz of *M. stellata* in 1872. However, the plant had long before this received the name *stellata* under the genus *Buergeria* and later in transfer to *Talauma*, so that *Magnolia stellata* has priority over *M. Halleana* in botanical nomenclature.

A deciduous shrub or small tree, bearing many showy flowers in advance of the leaves. The branches are many and spreading, with short internodes, terete, gray or brown, at first hairy but becoming glabrous except near the buds and perhaps toward the end; the terminal winter-buds are large, densely silky-woolly; the lateral winter-buds are rather small but prominent, erect and usually appressed, also silky-woolly. The leaves are two to four or five inches long, oblong-obovate or elliptic, obtuse or short-pointed at the apex, the blade narrowed to a petiole one fourth to three eighths of an inch in length, firm and rather stiff in texture, the margins entire but often obscurely undulate, dull green and somewhat shining above, hairy-pubescent on the veins beneath when young but becoming smooth and the midrib and cross-veins very prominent, with a fine network between. The flowers are about three inches across at full anthesis, freely produced, white or with more or less faint pencillings of pink, or sometimes (var.

rosea) blush or pink on the outside, fragrant, prominently subtended by the large scales of the winter-bud; there is little or no distinction of sepals and petals, the parts being usually a dozen or more, about one and one-half inches long, long-oblong or oblanceolate and short-acute, at first wide-spreading but becoming reflexed; stamens many and short, the yellow anthers forming a ring about the projecting many-carpelled pistil. The fruit is an irregular interrupted strobile-like body comprised of the imbricate carpels, only part of which appear to mature; the fertile carpels split into two obtuse or short-acute valves and expose usually a single pea-like scarlet smooth seed.

L. H. BAILEY.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Fruiting and leafing branch.



CLERODENDRON THOMSONAE

(Plate 212)

CLERODENDRON THOMSONAE

Mrs. Thomson's Clerodendron

Native of the west coast of Africa

Family VERBENACEAE VERVAIN Family

Clerodendron Thomsonae Balf. Trans. Bot. Soc. Edinb. 7: 265. *pl. 7;* 580. *pl. 16.* 1862.

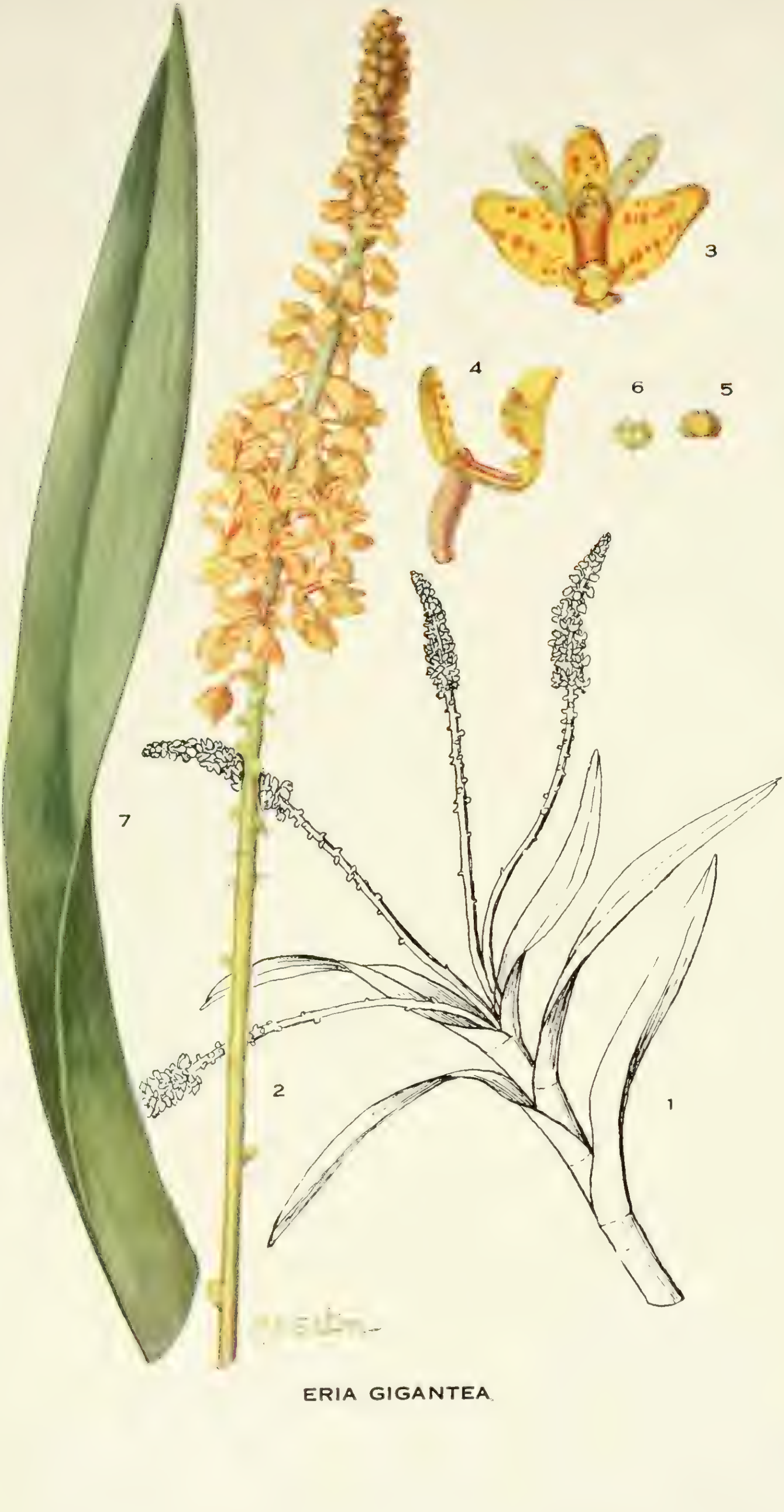
This showy vine has been grown at the New York Botanical Garden since 1903 at the entrance to house four, on the west side of the range, between the steam-pipes and the wall, and makes showy masses of bloom both in winter and in summer. It evidently likes plenty of light and heat and grows rapidly, for as often as it is cut back it reappears the next season covered with large clusters of conspicuous blossoms. It was discovered in western Africa, near the Gulf of Guinea, in the delta of the Niger at Old Calabar, by the Rev. W. C. Thomson in 1861, where it grew abundantly along the banks of the river, climbing over shrubs. It was sent to Prof. Balfour at the Botanical Gardens at Edinburgh in a Wardian case and was described and figured by him from plants that bloomed in December, 1861. A larger and more showy variety known as *Balfourii* was also first cultivated from seed at Edinburgh and the names seem to have been used interchangeably. This was figured on plate 255 of the Floral Magazine in 1865 and in 1869 a cross between *C. Balfourii* and *C. splendens* was also figured as *Clerodendron speciosum* (plate 432) having still larger and more showy flowers with the calyx tinged with pink.

About one hundred species of *Clerodendron* are known in the tropics, mostly natives of the Eastern Hemisphere, of which seventy are natives of Africa and a few of these are grown either in greenhouses or as showy garden plants in tropical America. *Clerodendron fragrans* has become naturalized in Florida and the West Indies and escaped from cultivation in Bermuda, and its large, dense clusters of fragrant pure white flowers would make it most attractive were it not for the disagreeable odor of the leaves. The Japanese *Clerodendron, C. trichotomum,* has been figured on plate 15 of Addisonia and has been grown for twenty-one years in the fruticetum. *C. foetida* is hardy in the middle and southern States, and may be grown as far north as Philadelphia. *C. Thomsonae* is also planted for ornament in Bermuda and is seen in cultivation in the West Indies and Trinidad. It may be grown from seed or propagated by cuttings and deserves a high rank among ornamental plants for its showy and decorative inflorescence.

Mrs. Thomson's clerodendron is a strong-growing vine, reaching ten to twelve feet, with stout, fleshy stems; its leaves are large and petiolate, often six inches in length, opposite in pairs, with entire margins, smooth and glossy, of a dark rich green. The flowers grow in large loose cymes, hanging alternately in regular clusters. The calyx is nearly an inch long, five-parted and persistent, pale yellowish green, changing to pure white when in flower and becoming a faded rose-color when in fruit. The corolla is tubular at base with a brilliant, cardinal red, five-parted limb, which is unequally split with the four stamens exserted from the fissure; these are in two pairs of unequal length and long-exserted. The ovary is four-parted and the fruit a glossy black externally with a brilliant red aril uniting the four carpels.

E. G. BRITTON.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Corolla, split open, with stamens. Fig. 3.—Anthers, × 4. Fig. 4.—Fruit.



ERIA GIGANTEA

(Plate 213)

ERIA GIGANTEA

Gigantic Eria

Native of the Philippine Islands

Family ORCHIDACEAE ORCHID Family

Eria gigantea Ames, Orchidaceae **2**: 192. 1905.

Among orchids gathered on Mt. Mariveles, Luzon, in 1905, this caulescent Eria was found and proved to be a new species related to *Eria major* Ridl. and *E. tricuspidata* Rolfe, of the section *Eriurae*. The type, which was gathered alive, was deposited in the New York Botanical Garden in September, 1907, and from flowers produced by it in February, 1919, our plate was prepared. The earliest record of the species is based on dried specimens gathered on Mt. Mariveles in 1904, by D. LeRoy Topping.

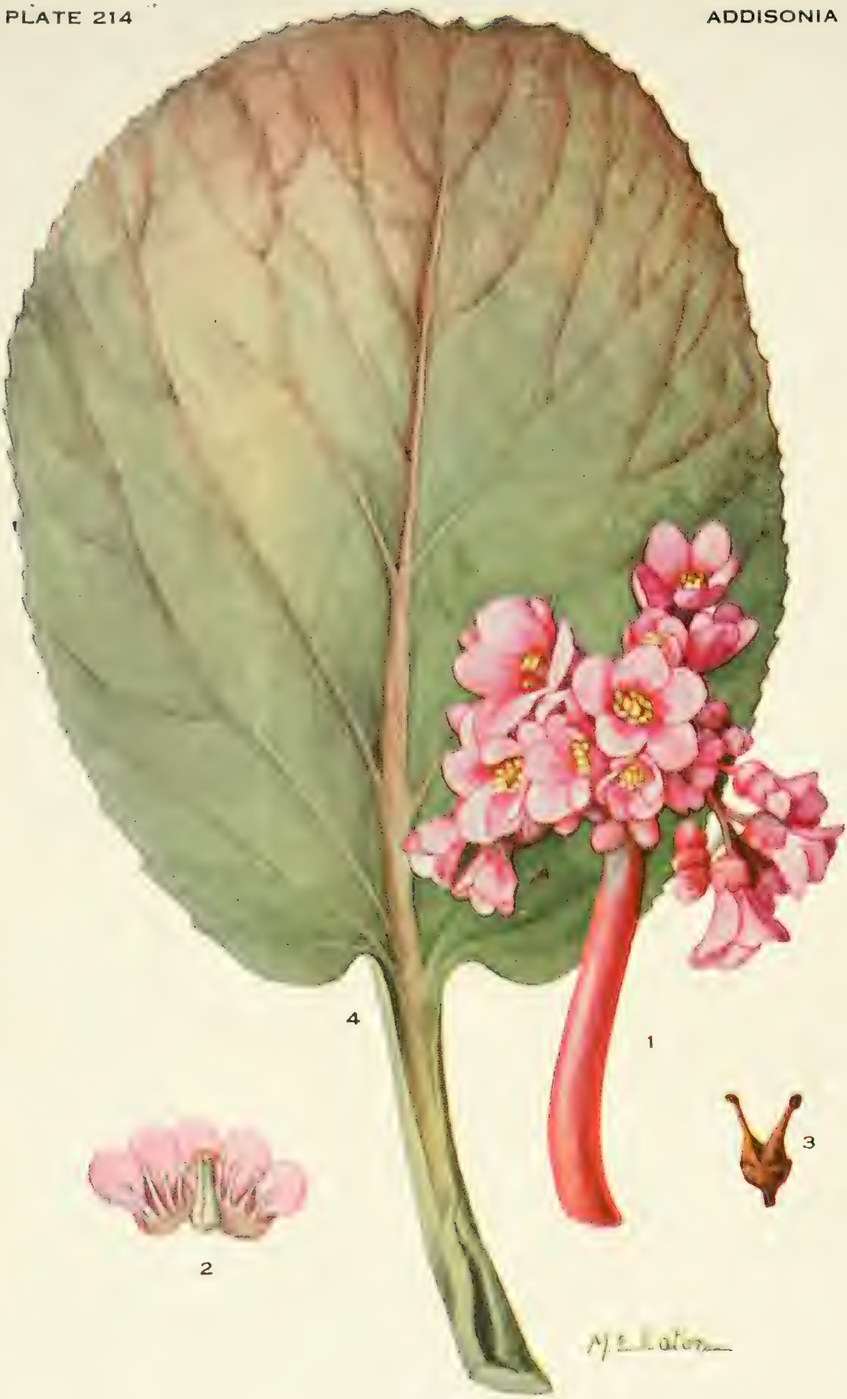
As botanical explorations of the Philippines progressed, the range of *Eria gigantea* was found to include Mindanao, where it ascends to an altitude of four thousand feet. In its native haunts it blooms from March to July. Under cultivation it has bloomed in February, March, July, August and September, the first flowers having opened in this country in early July, 1905, when the species was originally described.

Although *Eria gigantea* is by no stretch of the imagination a candidate for horticultural prominence, the flowers are extraordinarily beautiful objects when viewed on a white field, in strong light, under the dissecting microscope. It is, however, a noteworthy plant, horticulturally, because of its ready adaptability to cultivation. Among plants propagated from the type at the New York Botanical Garden, there is a vigorous specimen in the Botanic Garden of Harvard University that produced five or six flowering shoots in August, 1921, sixteen years after the original plant was introduced from the Philippines.

The gigantic eria is an upright herb of vigorous habit, the leafy stems that suggest cornstalks attaining a length of three or more feet and forming large clumps either on trees or on the ground. The leaves are about one foot long and an inch or more wide, of leathery texture, oblong-lanceolate in outline, channeled at the base, bilobed at the tip, one lobe much exceeding the other, the leaf-bases or sheaths alternating, equitant, distichous, concealing the stems, persistent, at length becoming fibrous on defoliated shoots. The flower-shoots are about one foot long and from three to five in number, arranged in a single rank at the point of origin. These flower-shoots, produced at the summit of the leafy stems, are clasped at the base by a conduplicate sheath or spathe. The peduncle is rigid, slightly arching, for the most part scurfy-pubescent, with several green, broadly ovate, acute bracts below the raceme. The raceme is many-flowered, six inches or more long, elongating during anthesis, the lowermost flowers turning brownish or black and then dropping off while the terminal ones are still crowded together to form a cushion of tiny green buds. The flowers are yellowish, sparsely spotted with crimson magenta, emitting an odor suggestive of linseed oil, three eighths of an inch across between the tips of the lateral sepals. The pedicel and ovary are together about one quarter of an inch long, densely clothed with a whitish covering of stellate trichomes which extend to the lateral sepals. The lateral sepals are ovate-lanceolate, spreading and with the foot of the column forming a distinct mentum; the upper sepal is directed forward over the column, considerably narrower than the laterals and strongly concave. The petals are oblong-spatulate, obtuse, rarely, or only sparingly, spotted with magenta crimson, much smaller and more membranaceous than the sepals. The labellum is a remarkable organ and extremely complex in structure; it is joined to the foot of the column and in outline is distinctly three-lobed; the lateral lobes obliquely ascending, semi-ovate, obtuse, with six or more crimson magenta spots; the middle lobe transversely oblong or subquadrate with a deflexed apicule; the disc bilamellate, each lamella extending almost to the sinus formed by one of the lateral lobes with the middle lobe; in addition to the lamellae there is a median keel that terminates in a thickened process at the base of the middle lobe; there are four calluses on the disc, the largest one trigonous in shape and situated near the centre of the middle lobe, the remaining ones at the base of the labellum, the largest being linguiform, its tip curved toward the column; on each side of this callus the others arise as shorter papiliform emergences; these three basal calluses are deep magenta crimson, but like the terminal one are concealed by a dense mass of yellow, mealy granules. The column is fleshy, suffused with magenta, dilated upwards, but without wings or appendages. The pollen-masses are complanate-pyriform, four in each anther-cell.

OAKES AMES.

EXPLANATION OF PLATE. Fig. 1.—Terminal portion of a flowering stem, much reduced. Fig. 2.—Raceme. Fig. 3.—Flower, × 3. Fig. 4.—Flower, with lateral sepals and petals removed, × 3. Fig. 5.—Anther, × 4. Fig. 6.—Pollen-masses, × 4. Fig. 7.—Leaf.



BERGENIA CRASSIFOLIA

(Plate 214)

BERGENIA CRASSIFOLIA

Thick-leaved Saxifrage

Native of Siberia

Family SAXIFRAGACEAE SAXIFRAGE Family

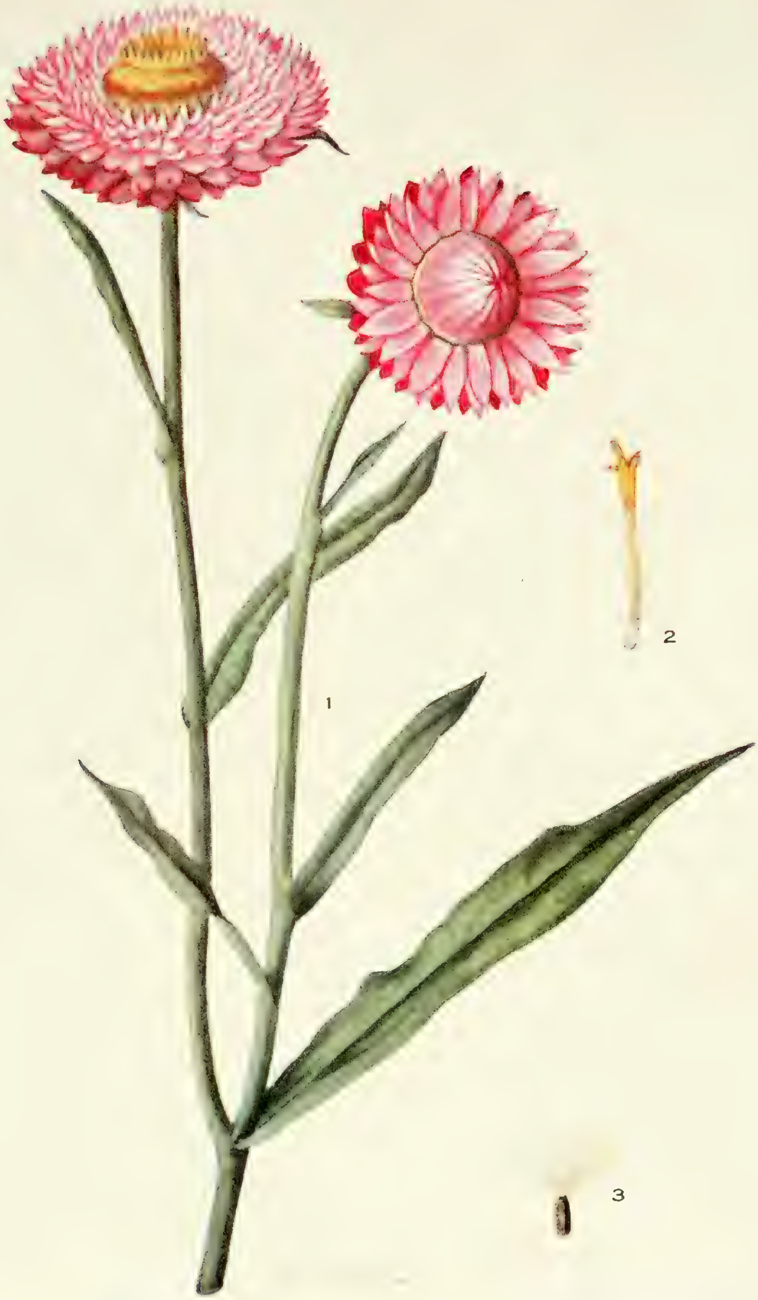
Saxifraga crassifolia L. Sp. Pl. 401. 1753.
Bergenia crassifolia Fritsch, Verh. Zool.-Bot. Ges. Wien **39**: 587. 1889.

The genus *Bergenia* includes a few saxifrages with large, thick leaves, and showy blooms appearing early in spring. Many other types of saxifrages are to be found in rock gardens abroad, but they are not as readily grown in this country as are the bergenias, which do well in moist pockets in rocks, and are among our earliest plants to bloom. The flowering scapes are enclosed in thick reddish sheaths when first uncovered in spring, but the sun soon draws out the clusters of buds, and as they open and the scapes lengthen we have a showy mass of pink bloom. After the flowering season the leaves develop and during the summer cover the ground with a mat of leathery foliage. The group of plants from which our illustration was taken, has flourished many years in the rock pockets of the saxifrage bed in the Herbaceous Grounds of the New York Botanical Garden.

The thick-leaved saxifrage is a perennial herb with a thick, woody, brittle rootstock. The leaves are round in general outline, with shallow-toothed margins, rounded apices, and heart-shaped to wedge-shaped bases, and are of a leathery or fleshy texture; they are borne on thick petioles furnished with membranous stipules at the base. The succulent colored flower-stalk bears a cluster of many pink flowers. The calyx is bell-shaped; the five clawed, rounded, overlapping petals are inserted on the calyx; the ten roundish anthers are borne on short filaments, which are also inserted on the calyx. The two-parted pistil develops into a capsule filled with cylindric seeds.

KENNETH R. BOYNTON.

EXPLANATION OF PLATE. Fig. 1.—Flowering stalk. Fig. 2.—Flower, cut open. Fig. 3.—Fruit. Fig. 4.—Leaf.



HELICHRYSUM BRACTEATUM

(Plate 215)

HELICHRYSUM BRACTEATUM

Strawflower

Native of Australia

Family CARDUACEAE THISTLE Family

Xeranthemum bracteatum Andr. Bot. Repos. *pl. 375.* 1804.
Helichrysum bracteatum Willd. Enum. Hort. Berol. 869. 1809.

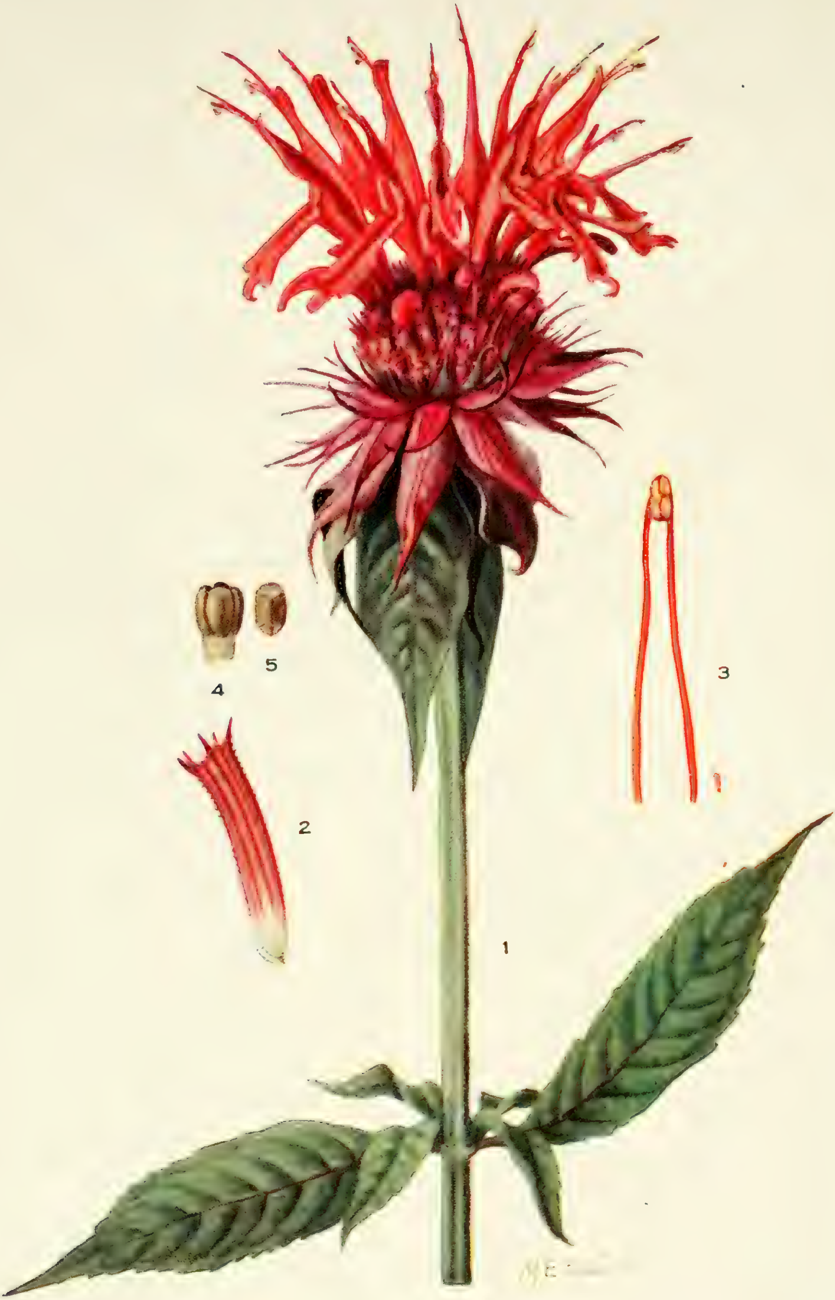
Of the many everlasting flowers or immortelles of horticulture, some natural, others artificial, the most important, to the gardener at least, belong to the thistle family. Various genera have contributed straw-like blooms, among them *Helipterum*, *Ammobium*, and *Xeranthemum;* but *Helichrysum*, especially the present species, is the best for our gardens. Here we have good-sized blooms with some half-dozen rows of shiny, vari-colored, bracts making up the greater part of the flower-head, and of such lasting quality as to keep well if cut and kept dry.

This now common annual was introduced from Western Australia into European gardens about 1799. It is of vigorous growth, branching habit, and long blooming-period; produces seed freely; is free-flowering, with a wide range of coloring; and is adapted to the hot summers of our climate. Our illustration is from plants in the flower borders of the New York Botanical Garden, where they bloom each year from seed.

The strawflower in an annual herb growing to a height of nearly four feet, with leafy, glabrous or slightly hairy stems, branching towards their summits. The linear to lanceolate leaves are up to seven inches long, alternate, and sessile, or tending to clasp the stem. The flower-heads are terminal and are made up of two kinds of flowers in a yellow disk surrounded by many involucral bracts; the outer flowers are pistillate, the inner ones in addition to the pistils have stamens inserted near the base of the five-lobed corolla. The broad chaffy involucral bracts, which are the most conspicuous feature of the flower-head, are in several series, the outer ones short and triangular, the middle longer and oval, the inner narrower and sharp-pointed; erect during the flowering period, they become reflexed as the fruiting stage is reached. The achenes are smooth, cylindric, curved, and bear at their summits about twenty to thirty plumy bristles.

KENNETH R. BOYNTON.

EXPLANATION OF PLATE. Fig. 1.—Flowering stem. Fig. 2.—Disk-flowers × 2. Fig. 3.—Fruit, × 2.



MONARDA DIDYMA

(Plate 216)

MONARDA DIDYMA

Oswego-tea

Native of eastern North America

Family LAMIACEAE MINT Family

Monarda didyma L. Sp. Pl. 22. 1753.

Our native herbs with flowers of an intense and striking shade of red are quite limited in number. The subject of this note and the cardinal flower—*Lobelia cardinalis*—stand almost alone in a class. Moreover, its flowers rival those of the cardinal flower in splendor of tint and mass, and it adapts itself more readily to the various abnormal horticultural environments. The Oswego-tea is the largest and the most showy of all the species of the genus *Monarda*. Its maximum height is usually given as three feet. However, in the high mountain meadows and ravines of the southern Appalachians one may see clumps of plants six feet tall with brilliant flower-heads, solitary at the ends of the square stems, or in tiers, four inches in diameter.

Like many of our aromatic herbs the bee-balm, as this plant is often called, was used by the aborigines and the early settlers of America for brewing a tea. As a result of this economic element, as well as on account of its beauty, it early found its way into the gardens of the pioneer, and it was probably cultivated in the gardens of the Old World as early as the beginning of the eighteenth century.

The Oswego-tea is a large perennial herb, six feet tall or less, the square stem pubescent, especially along the angles, rarely hirsute, or sometimes glabrous. The leaves are borne in rather distant pairs, with short hairy petioles and lanceolate to ovate serrate blades which are acuminate at the apex and usually finely hairy on both sides, especially on the veins. The flower-clusters are dense, terminating the stem, and also the branches when present, thus solitary, or in two or more tiers, each subtended by an involucre of leafy, red-tinged bracts, the larger ones usually toothed and closely resembling the upper pair of leaves which are also red-tinged. The calyx is about a half inch long, tubular, slightly curved, finely ribbed, minutely pubescent, with sharp teeth which are scarcely as long as the diameter of the tube. The corolla is scarlet, often an inch and a half long, two-lipped, the lips nearly as long as the tube, the upper lip lanceolate, entire, the lower lip larger than the upper, with two rounded lateral lobes beyond which projects a median linear lobe with a V-shaped notch at the apex. The fruits are ellipsoid, about one twelfth of an inch long.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Top of flowering stem. Fig. 2.—Calyx, × 2. Fig. 3.—Stamens, × 2. Fig. 4.—Fruit, × 3. Fig. 5.—Single nutlet, × 3.

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ADDISONIA

COLORED ILLUSTRATIONS
AND
POPULAR DESCRIPTIONS
OF
PLANTS

VOLUME 6 NUMBER 4

DECEMBER, 1921

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MARCH 9, 1922

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A bequest made to the New York Botanical Garden by its late President, Judge Addison Brown, established the

ADDISON BROWN FUND

"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonomy, and a brief statement of the known properties and uses of the plants illustrated."

The preparation and publication of the work have been referred to Dr. John H. Barnhart, Bibliographer, and Mr. George V. Nash, Head Gardener.

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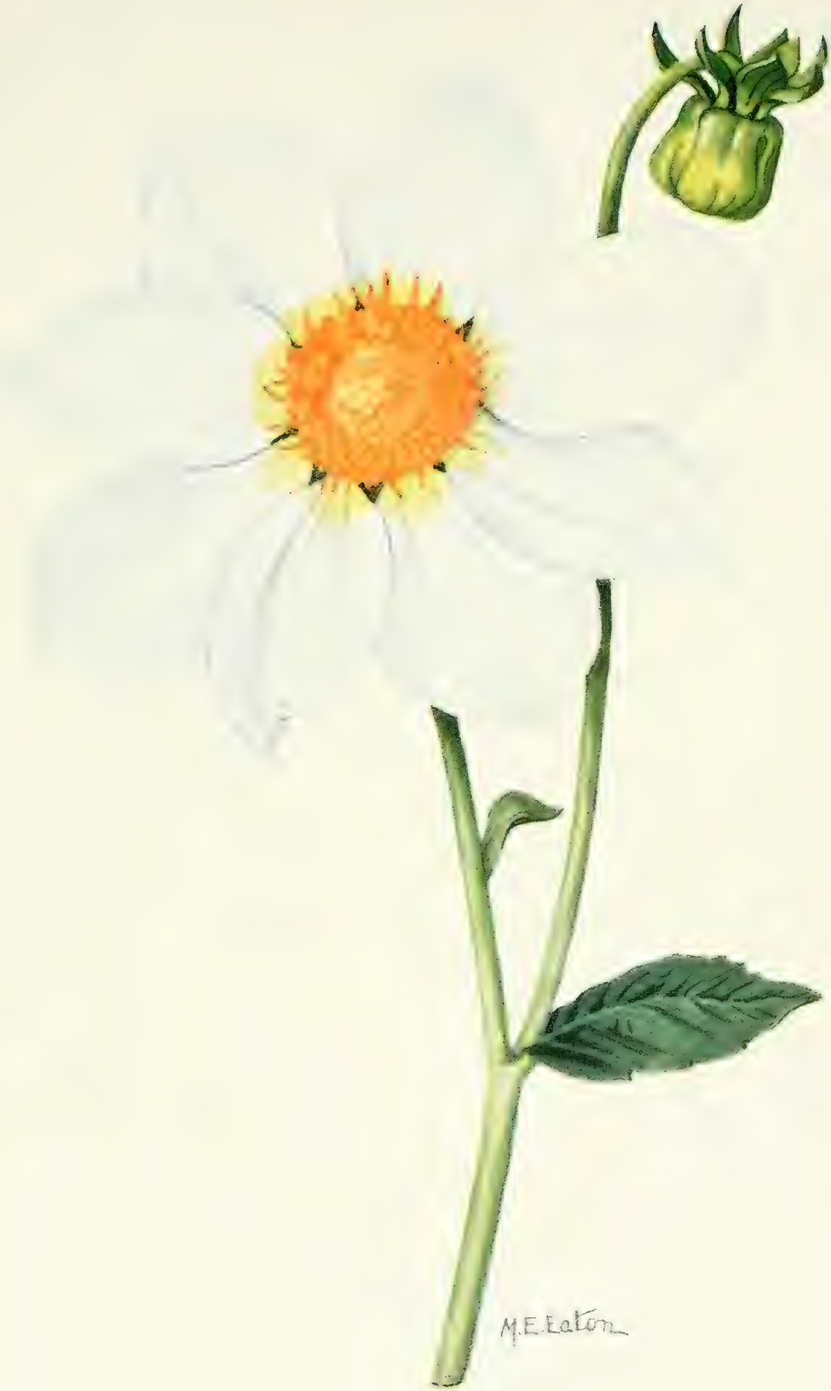

DAHLIA "DAHLIADEL CENTURY"

(Plate 217)

DAHLIA "DAHLIADEL CENTURY"

"Dahliadel Century" Dahlia

Garden Hybrid

Family CARDUACEAE THISTLE Family

This is a good representative of the so-called "single" dahlias, the type that comes the nearest to representing most of the native dahlias, as they occur in the mountains of Mexico, Central America, and northern South America. In the native state, however, the prevailing colors would appear to be shades of red, pink, scarlet, purple, yellow and orange. According to the definition adopted by the American Dahlia Society, the heads or "flowers" of single dahlias have large open centers and from eight to twelve floral rays (usually eight) arranged more or less in a single series.

It would appear that in 1789 Vicente Cervantes, who was associated with Martin Sessé, the director of the botanic garden in the City of Mexico, sent dahlia seeds to the Abbé Cavanilles, director of the Royal Gardens in Madrid, and that those seeds, so far as is known, were the beginnings of the cultivated dahlias of Europe and of the United States. In 1791 Cavanilles gave the technical botanical name *Dahlia pinnata* to the species, or at least to one of the individual plants derived from those Mexican seeds, the name *Dahlia* being in honor of Andreas Dahl, a well-known Swedish botanist. Three years later he named two more forms, or species as he considered them to be, calling one *Dahlia rosea* and the other *Dahlia coccinea.* The first, *Dahlia pinnata,* had a semi-double "flower" or head; the other two were single-flowered. But so many sports, forms, varieties, or hybrids appeared within the next few years that later botanists were inclined to welcome the specific name *variabilis* proposed by Willdenow in 1809, under the generic name *Georgina,* a synonym of *Dahlia.* The original specific name, *pinnata,* though long considered a synonym of *variabilis,* should be restored, according to all of the prevalent codes of nomenclature. Although the first-described forms of dahlias had single or semi-double flowers, varieties with fully double flowers finally appeared and these became increasingly popular. By 1826 there were sixty varieties under cultivation in England by the Royal Horticultural Society and in 1841 an English grower is said to have possessed twelve hundred and twelve "double" varieties. In the United States, we find in a special dahlia list published in New York by George C. Thorburn in 1840 three hundred and thirty-six "double" varieties of what are now known as the "decorative" and "show" types. The earliest American dahlia list known to the present writer is in a "Catalogue of ornamental trees and shrubs, herbaceous and greenhouse plants, cultivated and for sale by Thomas Hogg, nurseryman and florist, at the New York Botanic Garden in Broadway,* near the House of Refuge," printed in New York in 1834. This list of sixty-five varieties includes no descriptions, except indications of color. A footnote states that early in the spring, there will be an addition "of fifty of the finest and best varieties from England."

The variety Dahliadel Century was originated by Warren W. Maytrott of Vineland, New Jersey, and was first offered to the public in 1918. Its parentage is unknown.

It is one of several closely related yet fairly distinct white single-flowered varieties, some of the others being Bride, Newport Angel, White Century, and White Lady. It was first grown in the dahlia border of The New York Botanical Garden in the season of 1918, from roots supplied by the originator. The drawing was made, natural size, from a flowering branch taken September 14, 1920.

A vigorous plant ordinarily four to six feet high, with large white "single" flower-heads. The stems are smooth. The lower leaves are more or less bipinnately parted, with usually five or seven primary lobes or leaflets, with small accessory alar lobes at the bases of the stalks of the lower pairs; the leaflets are dark green, short-pointed, and rather coarsely dentate and ciliolate-serrulate, the teeth cuspidate; the terminal leaflets or lobes are somewhat elliptic, the laterals are mostly lanceolate or ovate; the upper surface is puberulent along midribs and veins, the lower is pubescent on midribs and veins. The flower-heads are mostly four or five inches broad, erect, on strong peduncles. The bracts of the outer involucre are usually six, seven, or eight in one series, with suggestions of a second; they are ovate in the young bud, becoming spatulate in the opened head, their texture is coriaceous and their points obtuse or somewhat acute. The bracts of the inner involucre are commonly eight or nine, membranaceous, lanceolate or oblong-lanceolate, pale green or straw-colored, and obtusely pointed. The ray florets are usually eight or nine; their ligules are elliptic, blunt-pointed, slightly concave, and pure white, with a tinge of yellow at base. The disk florets are usually one hundred and twenty-five to one hundred and fifty, their orange corollas and opening anthers forming a pleasing contrast to the white of the ligules.

MARSHALL A. HOWE.

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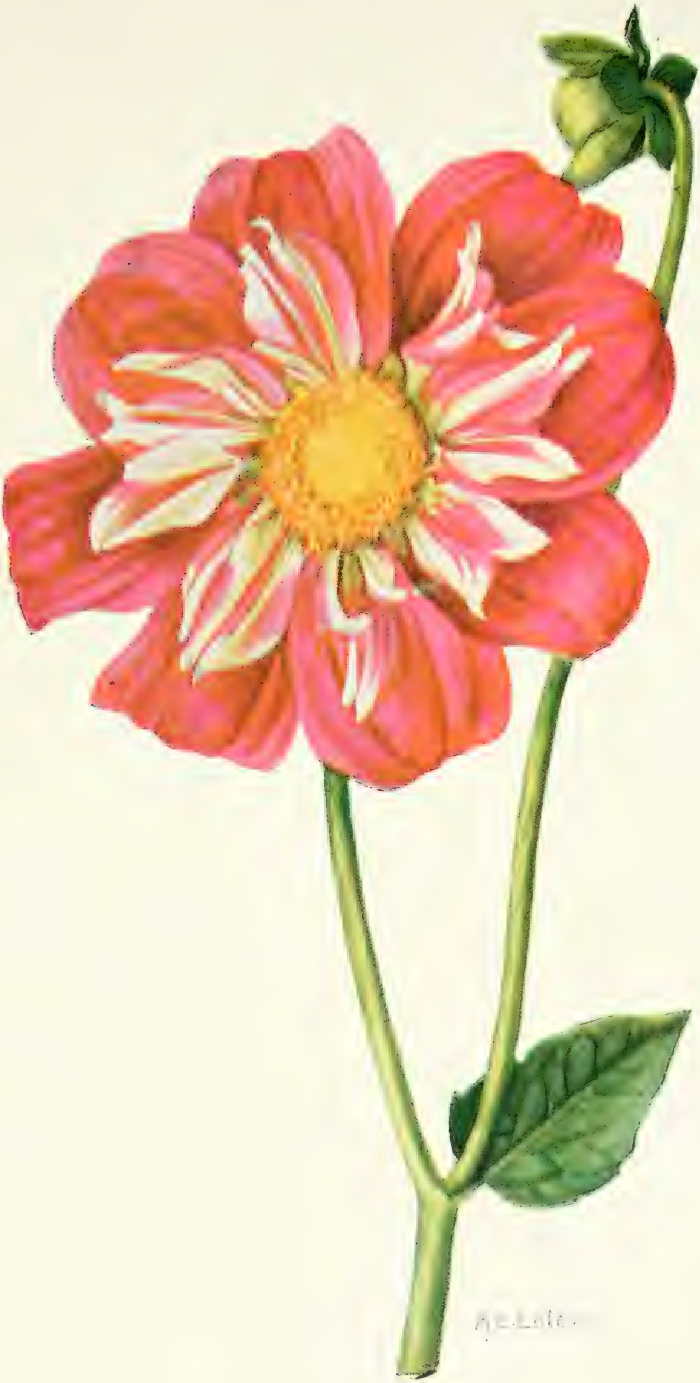
* Southeast corner of Twenty-Third Street.



DAHLIA "AMI NONIN"

(Plate 218)

DAHLIA "AMI NONIN"

"Ami Nonin" Dahlia

Garden Hybrid

Family CARDUACEAE THISTLE Family

The French variety "Ami Nonin" is an attractive and desirable representative of the class of dahlias known as "collarettes." In the "collarette"* group, the flower-head, according to the definition of the American Dahlia Society, is of the "single" type, having "not more than nine floral rays with one or more smaller rays, usually of a different color, from the heart of each ray floret, making a collar about the disk."

Priority in the matter of developing the first modern collarette dahlia probably belongs to M. Gerbeaux of Nancy, France, who introduced the "Gloire de Nancy" in 1898 (Revue Horticole **76**: 64. 1904). Later and better varieties and those most often credited with priority were the "Président Viger" and "Joseph Goujon," which were originated in Lyon, France, in the season of 1900. The better of these, "Président Viger," was advertised in the 1901 catalogue of Rivoire, Père et Fils, of Lyon, for distribution in 1902. A flower-head of the same general style seems to have been developed by H. Cannell & Sons of England in 1901 (Gard. Chron. III **30**: 153. 1901). "Président Viger" reached England in 1902 and seed at least of the "Dahlia à collerette" was offered in American catalogues as early as 1903 (Peter Henderson & Co.). Other varieties of the same general character soon followed. They were recommended as more enduring for cut flowers than varieties of the simpler single-flowered type and most of them have justified this claim. The later varieties have shown many attractive combinations of color and those in which the color of the narrower smaller rays of the collar is in pleasing contrast to that of the larger outer rays have been especially popular. As in most of the other groups of dahlias, some of the varieties are naturally short in habit of growth, others tall, and others of medium growth, and some are naturally floriferous, while others are less so. Among the best and most popular varieties of the collarette type in cultivation at the present time may be mentioned Mme. E. Poirier, Maurice Rivoire, Géant de Lyon, Holyrood, and John Bull, to which may be added three excellent varieties of American origin, Achievement (Alexander), San Mateo Star (Bessie Boston), and The Peach (Stillman).

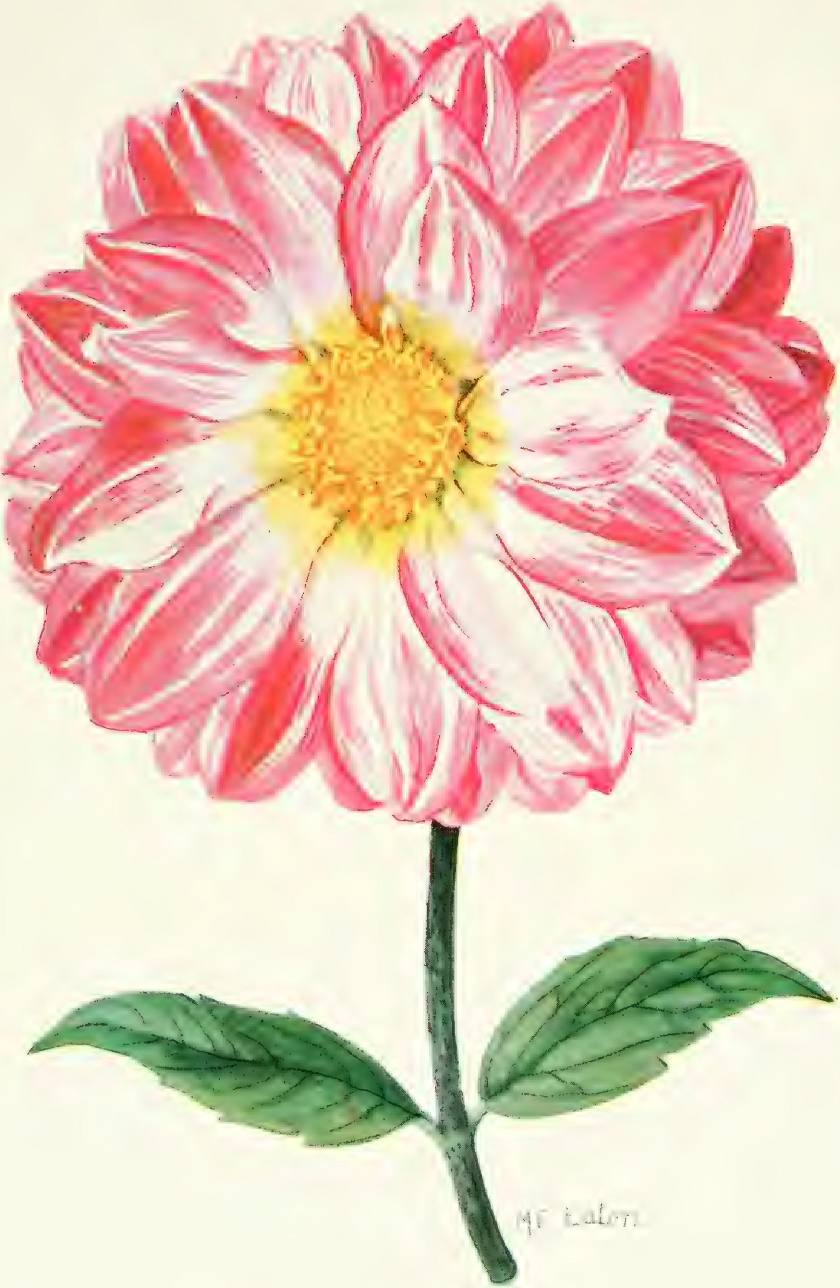
---

* Some of the English and a very few of the American dahlia-growers have preferred to retain the French orthography "collerette." The usual French name for the group is "Dahlias à collerette" or "Dahlias simples à collerette."

According to information furnished to the writer by M. André Charmet of Monplaisir, Lyon, France, the variety "Ami Nonin" was originated by him in 1908 and was derived from varieties that were never disseminated. It was named in honor of his friend, Auguste Nonin, a well-known horticulturist of Châtillon, near Paris, and was first introduced to commerce in 1910. It has been cultivated in the dahlia border of The New York Botanical Garden since 1918, from roots originally furnished by Henry A. Dreer of Philadelphia. The flower-head represented on our plate was gathered September 15, 1920, and was drawn in its natural size.

A plant ordinarily three to five feet high, with large crimson-carmine flower-heads of the "collarette" type, the "collar" more or less white. The stems are pubescent. The lower leaves are pinnately parted, with usually five primary lobes or leaflets, with small accessory alar lobes at the bases of the stalks of the lowest pair and often a single lobe at the outer (lower) base of the main lamina of the lowest pair; the leaflets are dark green, short-pointed, and rather coarsely dentate and minutely ciliolate on margins, the teeth moderately cuspidate; the upper surface is puberulent along midrib and veins, the lower is sparingly pubescent or pilose on midribs and veins. The flower-heads are mostly three and one half to four and one half inches broad and are held suberect on inclined peduncles. The bracts of the outer involucre are five to eight, rather broadly spatulate, subacute or obtuse, and coriaceous. The bracts of the inner involucre are usually eight, ovate-lanceolate, membranaceous, pale green or straw-colored, subacute or obtuse. The ray florets are commonly eight; their large outer ligules are elliptic, somewhat concave below and recurved at the commonly bifid-cuspidate apices, the color crimson-carmine, sometimes fading to old rose; the ligules of the inner series are one half to two thirds the length of the outer and about half their width, three- to five-cleft or parted, and largely white, but showing varying proportions of crimson-carmine, with shadings of yellow. The disk florets are usually one hundred and thirty to one hundred and fifty.

MARSHALL A. HOWE.



DAHLIA "MME. J. COISSARD"

(Plate 219)

DAHLIA "MME. J. COISSARD"

"Mme. J. Coissard" Dahlia

Garden Hybrid

Family CARDUACEAE THISTLE Family

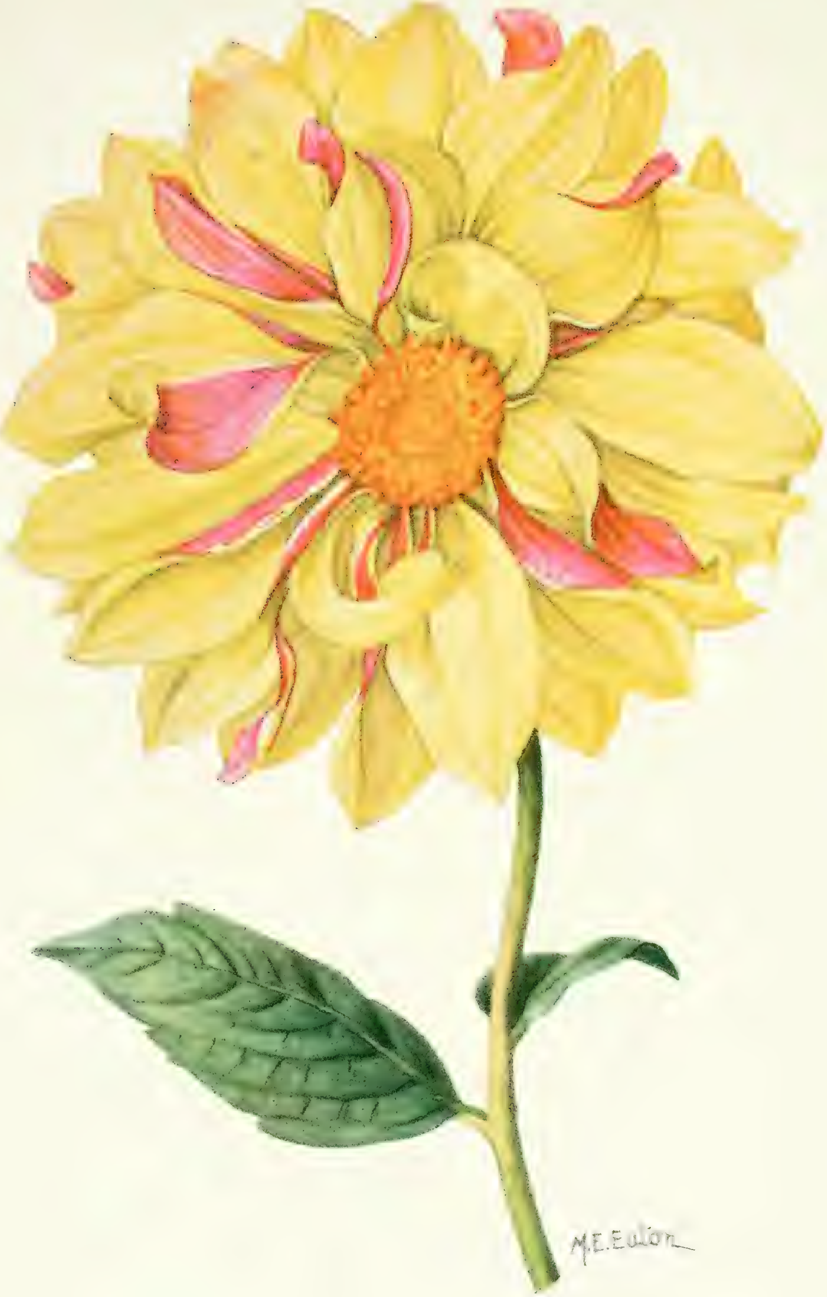
The present variety is usually a good representative of the group of dahlias known in America as the "duplex" class, though in its simpler flower-heads it rarely approaches the "single" type and in its more double conditions it is occasionally not far removed from the peony-flowered group. The American Dahlia Society defines the "duplex" class as having "semi-double flowers, with center almost exposed on opening of bud, with rays in more than one row, more than twelve, long and flat, or broad and rounded, not noticeably twisted or curled." The group intergrades with the "single" and "peony-flowered" classes, and as yet it has gained recognition in only a few of the American catalogues, most of the varieties properly belonging here being still included in the "peony-flowered" group. Although nearly all of the botanical species of dahlias, as originally described, have been credited with "single" flower-heads, yet the beginnings of the "doubling" process, constituting the modern "duplex" type, had a very early origin and the description and figures of *Dahlia pinnata* Cav., the first member of this genus to receive a Latin name (Cavanilles, Icones et Descriptiones Plantarum **1**: 57. *pl. 80.* 1791), were based upon plants which showed no single flowers but did bear flower-heads of the "duplex" character. And if the two rather crude figures of the native Mexican *acocotli*, published by Hernandez in 1651 in his "Nova plantarum, animalium, et mineralium Mexicanorum historia," are indeed figures of dahlias, as they are generally believed with good reason to be, the "duplex" type was found in the mountains of Mexico upwards of three centuries ago.

The credit of introducing the variety "Mme. J. Coissard" is commonly assigned by French horticulturists to Voraz of Lyon, but it seems to have been named for the wife of a private gardener in Lyon who was probably the real originator. Its introduction is sometimes credited also to André Charmet of Monplaisir, Lyon, who appears to have been its chief distributor. In September, 1911, a Gold Medal of the National Dahlia Society of Great Britain was awarded to Messrs. H. Cannell & Sons of Swanley, Kent, for their exhibit of dahlias, of which the only variety mentioned by name (Gard. Chron. III. 50: 214. 1911) is "a huge bloom, seven inches across, of Madame J. Coissard." Later in the same year, the National Dahlia Society awarded a certificate of merit to the same variety growing in its trial gardens at Swanley.

The variety has been grown every year in the dahlia border of The New York Botanical Garden, beginning with 1918, from roots originally furnished by Mr. W. J. Matheson, of Huntington, New York, and by the present writer. The drawing was made, natural size, from a flower-head (perhaps rather more "double" than is usual), taken on September 24, 1920.

A low plant commonly two and one half to three and one half feet high, with large semi-double crimson-carmine and white or cerise and white flower-heads of the "duplex" type. The stems are smooth or nearly so. The leaves are mostly simple, dark green, the lower long-stalked, with three lobes or leaflets, the blades elliptic-lanceolate to elliptic-ovate, short-pointed, or moderately long-pointed, coarsely dentate and the margins also minutely ciliolate-serrulate; the upper surface is puberulent along midrib and veins, the lower surface is sparingly pubescent or pilose on midrib and veins. The flower-heads are mostly four and one half to five and one half inches broad and are held suberect on ascending peduncles. The bracts of the outer involucre are usually five or six, lanceolate, subacute, and coriaceous. The bracts of the inner involucre are commonly fifteen to twenty, oblong-lanceolate or ovate-lanceolate, membranaceous, pale green or straw-colored. The ray florets are commonly fifteen to forty-five in two to four series; their ligules are elliptic, elliptic-obovate, or elliptic-ovate, recurved at the rather obtuse or subacute apex, the inner sometimes narrower and slightly curled or twisted, nearly plane or the outer sometimes lightly convex, the colors being various shades, combinations, and proportions of carmine, cerise, crimson, magenta, and white with light yellow at the bases of the ligules, the reverse of the ligules whitish or pallescent with longitudinal streaks of carmine or cerise. The disk florets are usually about one hundred and thirty to one hundred and fifty.

MARSHALL A. HOWE.



DAHLIA "MARGUERITE CLARK"

(Plate 220)

DAHLIA "MARGUERITE CLARK"

"Marguerite Clark" Dahlia

Family CARDUACEAE THISTLE Family

"Marguerite Clark" is an attractive example of what are currently known as the "peony-flowered," "peony," or "art" dahlias. The definition of the "peony-flowered" dahlias, as framed by the American Dahlia Society, calls for "semi-double flowers with open center, the inner floral rays being usually curled or twisted, the other or outer being either flat or more or less irregular." The members of the class intergrade on the one hand with the "duplex" group, and on the other with the "decorative" and "hybrid cactus" groups. In distinguishing them from the two last-named, the early presence of an open center in the flower-head is in practice the most important criterion of a peony-flowered dahlia, but the line of demarcation is often vague and two types of flower-heads may sometimes be exhibited by a single plant at the same time.

Peony-flowered dahlias are the sort most frequently obtained in an average lot of seedlings and unless the flowers are distinguished by attractive coloring, unusual form, or profusion in number, they are at the present time not highly esteemed in most quarters. However, they have enjoyed their periods of popularity, and, together with the cactus and decorative varieties, they have played an important part in the reaction against the alleged stiffness and formalism of the ball-shaped dahlia of the middle of the last century. The first good figure of a peony-flowered dahlia appears to be that of *Dahlia pinnata nana*, published in Andrews' Botanist's Repository (*pl. 483*) in 1807. The modern peony-flowered dahlias were given their first popular impetus in Holland and they were first known as the "Dahlias splendides" or the "Giant Dahlias of Holland." They were originated by H. Hornsveld of Baarn, and are said to have been derived by crossing single-flowered forms with varieties of the "cactus" type. They were exhibited at Amsterdam in 1903 and at a meeting of the Société nationale d'Horticole at Paris in September, 1904. These Dutch varieties reached America first in 1907. Numerous worthy additions have since been made by American dahlia-growers.

The prejudice against open-centered flower-heads in dahlias, which still obtains, was doubtless responsible for the comparatively late appearance of peony-flowered varieties in trade catalogues. And it may well be that the same explanation accounts also for the delayed appearance of dahlias of the "cactus" type. Mr. Joseph Paxton, in discussing the "characteristics of excellence" in dahlias in 1838, alludes to the sentiment then prevailing in the following words:*

> "Any irregularity in the shape of the petals, such as their being notched, quilled, convex, or too much concave, pointed, etc., is at once sufficient to render the flower unfit for public exhibition and competition. . . . In some full-blown flowers the eye or disk is evident, and no flower can be brought into competition, with any chance of success, when it is thus defective."

The variety "Marguerite Clark," named for a popular American actress, was originated by George L. Stillman of Westerly, Rhode Island, who first advertised it in 1915. It is said by Mr. Stillman to be a seedling of "Mme. J. Coissard," a French variety, shown on our plate 219. It was first grown in the dahlia border of The New York Botanical Garden in 1918, from a root supplied by the originator. The drawing was made, natural size, from a flower-head taken on September 28, 1920.

A low plant, commonly three or four feet high, with moderately large semi-double cream-colored and cerise-rose flower-heads of the "peony" type. The stems are smooth. The lower leaves have three or five lobes or leaflets, the upper are simple; the leaflets are dark green, short-pointed, dentate, and the margins also minutely and obscurely ciliolate-serrulate; the terminal leaflets are elliptic-ovate, the lateral ovate with a pronouncedly inequilateral base, all nearly smooth on both surfaces. The flower-heads are mostly four and one half to five and one half inches broad and more or less pendent. The bracts of the outer involucre are five to seven, lanceolate or lanceolate-spatulate, subacute, and coriaceous. The bracts of the inner involucre are mostly ten to fourteen, oblong-lanceolate, and membranaceous, pale green or straw-colored, and acute or subacute. The ray florets are commonly forty to sixty in four or five series; their ligules are broadly elliptic to narrowly elliptic, sometimes with narrower, redundant or accessory ligules springing from various parts of the tube, concave, convex, or variously curled or twisted, obtuse or rarely subacute, the inner faces cream-yellow, deepening towards the base, the outer faces with streaks and flecks of cerise and old rose on a background of cream-yellow. The disk florets are usually about one hundred.

MARSHALL A. HOWE.

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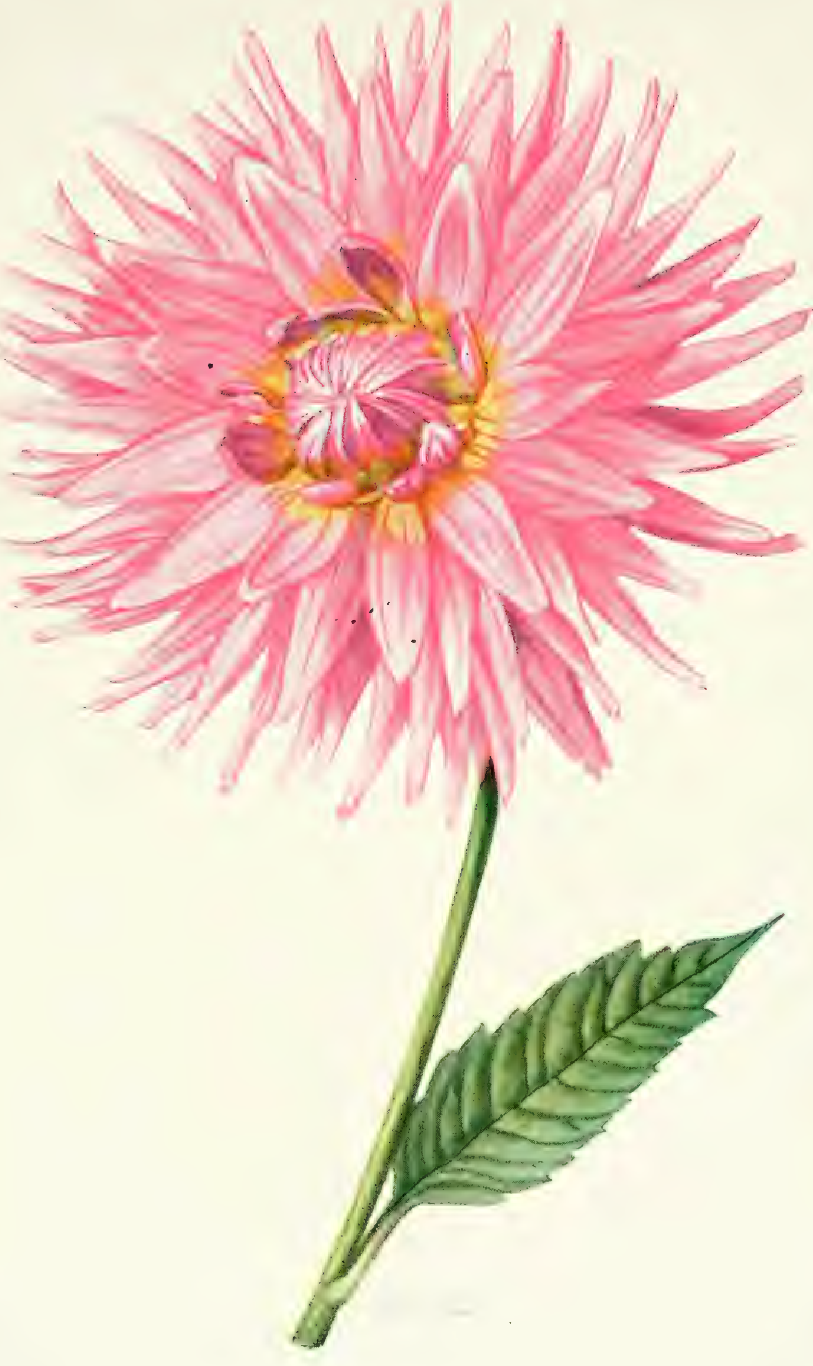
* A practical treatise on the cultivation of the dahlia, p. 103.



DAHLIA "MISS NANNIE B. MOOR'

(Plate 221)

DAHLIA "MISS NANNIE B. MOOR"

"Miss Nannie B. Moor" Dahlia

Garden Hybrid

Family CARDUACEAE THISTLE Family

This Californian dahlia, with its very full and double, rosy lavender-pink flower-heads, is an excellent representative of the so-called "cactus" dahlias. The "cactus" group of dahlias is one of comparatively recent origin and one that has done much to popularize dahlias in the last few decades. The general appearance of the flower-heads in this class is so very different from that in the primitive "single" varieties and also from that in old-fashioned ball-shaped double dahlias that many people do not at first sight recognize them as dahlias at all.

According to the definition framed by the American Dahlia Society, the flower-heads in the "cactus" type must be "fully double," which, however, is not interpreted to mean that they may never show an "open center" or any central florets with tubular corollas, for any "fully double" dahlia is likely to do this with age or on occasion. Being "fully double" simply means that at the climax of the perfection of beauty of the flower-heads as a whole, no "open center" is visible. Under the head of cactus dahlias, two subordinate groups are currently recognized, the "true or fluted type" and the "hybrid cactus type." In the first, the floral rays are long, narrow, straight, incurved, or twisted, "with sharp, divided, or fluted points and with revolute margins, forming, in the outer florets, a more or less perfect tube for more than half the length of the ray." In the hybrid cactus type, the floral rays are comparatively short, "broad, flat, recurved or twisted, not sharply pointed except when tips are divided (staghorn), margins only slightly revolute, and tubes of outer florets, if any, less than half the length of the ray."

The known history of the "cactus" dahlias apparently begins in the autumn of 1872, when a Dutch horticulurist, J. T. Van der Berg, received from a friend in Mexico a consignment of seeds, bulbs, and roots. Among the mostly rotten bulbs and roots was one dahlia root which was alive and from which slip-grown plants were propagated during the following winter and spring. These plants produced rich crimson flowers of a form very different from that of any dahlias known up to that time. This new species or variety was first catalogued in 1874 by Mr. Van der Berg under the name *Dahlia Juarezii.* Nothing like it is known to grow wild in Mexico and its earlier antecedents are shrouded in mystery. All of the hundreds of varieties of cactus dahlias now in cultivation are supposed to have been derived from this one root. Flowers of *Dahlia Juarezii* were exhibited at a meeting of the Royal Horticultural Society in the autumn of 1879, under the name of the "cactus dahlia," the name "cactus" being suggested by the resemblance of its flowers to those of a cultivated cactus, *Cereus speciosissimus* DC. The floral rays of the original cactus dahlia were but slightly tubular or fluted, and by a curious ignoring of historical precedent, *Dahlia Juarezii* would now qualify as a "hybrid cactus" rather than as a "true cactus" dahlia.

The dahlia "Miss Nannie B. Moor" was raised from seed by Mr. J. J. Broomall of Eagle Rock, California, in the season of 1914, the seed parent being his cactus dahlia "Prima Donna." The variety was named in honor of the daughter of a neighbor and was first introduced to the market in 1916. It has been grown in the dahlia border of The New York Botanical Garden since 1919 from roots furnished by the originator. The flower-head figured was taken September 19, 1920, and was drawn in its natural size.

A plant of medium height, commonly three to five feet high, with moderately large fully double lavender-rose flowers of the "cactus" type. The stems are smooth or nearly so. Most of the leaves have three or five lobes or leaflets, the lowest of which occasionally show one or rarely two basal lobules; the leaflets are of a medium green, rather long-pointed, serrate-dentate, the teeth cuspidate and the margins minutely ciliolate; the terminal leaflets are elliptic, the lateral elliptic or elliptic-ovate, the upper surfaces smooth, the lower minutely pubescent or sparingly pilose on midrib and veins. The flower-heads are mostly four to five and a half inches broad, are deep and full, and are held erect on stiff peduncles. The bracts of the outer involucre are usually six or seven, long-lanceolate, acute, and foliaceous or moderately coriaceous. The bracts of the inner involucre are mostly twelve to fourteen, long-triangular-lanceolate, subacute, and membranaceous. The ray florets, comprising all ordinarily visible in the head, number usually one hundred and sixty to three hundred; their ligules are oblong-elliptic, linear-elliptic, or linear-lanceolate, obtuse or subacute, at first tubular through the involution of their margins, later canaliculate and plane, and finally tubular in the upper half and apparently acuminate through the turning backward of the margins, the color lavender-rose, with traces of yellow at base. The disk florets are commonly seventy-five to two hundred and they are not exposed until very late in the development of the head.

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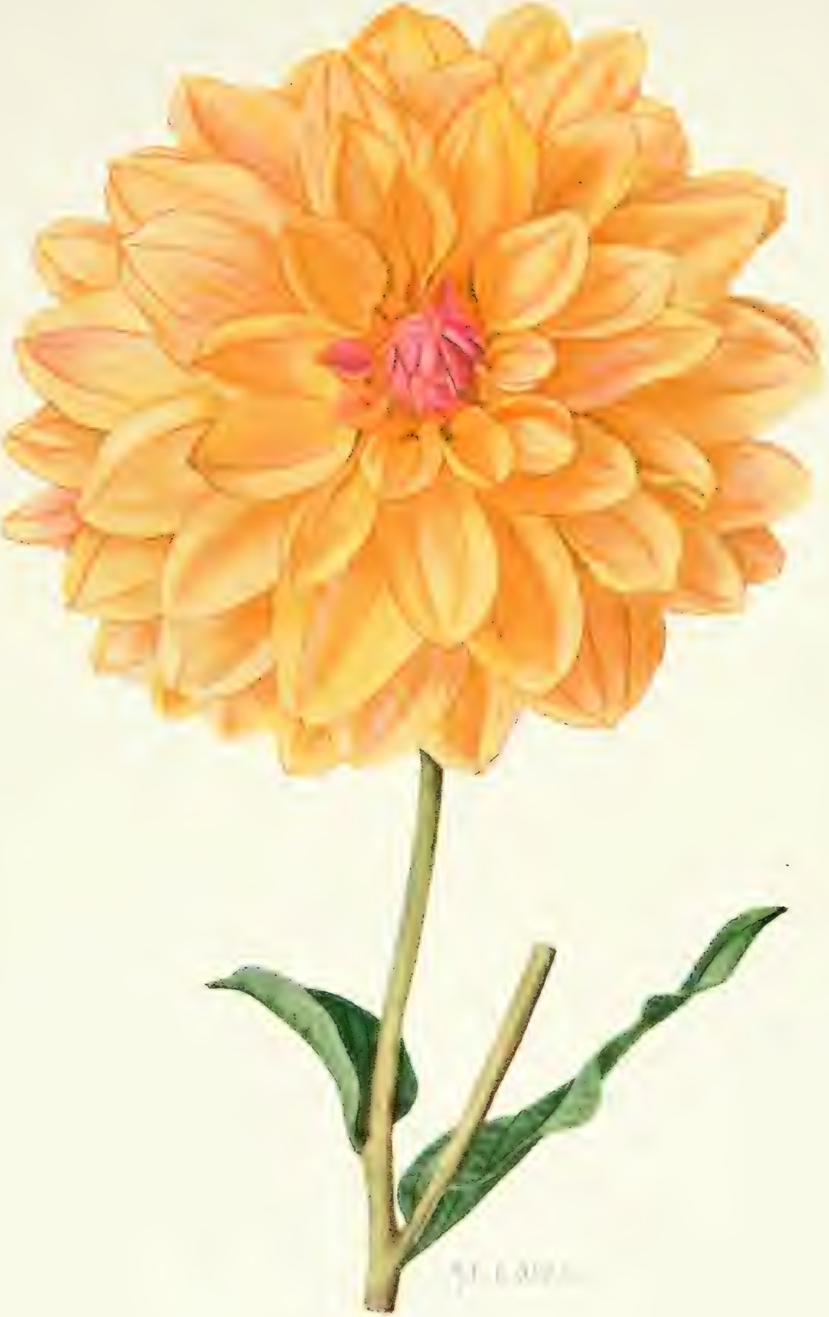

DAHLIA "KING OF THE AUTUMN"

(Plate 222)

DAHLIA "KING OF THE AUTUMN"

"King of the Autumn" Dahlia

Garden Hybrid

Family CARDUACEAE THISTLE Family

"King of the Autumn," a variety of Dutch origin, is a good example of the "decorative" class of dahlias, the class that is perhaps the most popular with American dahlia-growers at the present day. The American Dahlia Society defines varieties of this class as having "double flowers, full to the center in early season, flat rather than ball-shaped, with broad, flat, somewhat loosely arranged floral rays with broad points or rounded tips, which are straight or decurved (turned down or back), not incurved, and with margins revolute, if rolled at all." "Margins revolute," if pronounced, would lead to placing a variety in the hybrid cactus group, with which the decoratives intergrade, and any pronounced showing of an "open center," which is an occasional failing of the variety here figured, weakens the line of distinction between the decorative and peony groups. Again, the rounding and deepening of the flower-head and the cupping of the inner floral rays makes a transition to the "hybrid show" type. The decorative type of dahlia has been developed chiefly in Holland, England, and, more recently, in the United States. Most of the numerous varieties of this group now in cultivation in the United States are of domestic origin. The largest-flowered varieties grown at the present time belong in this group, the flower-heads occasionally attaining a diameter of thirteen inches. Many of the varieties have flower-heads that are too large to be represented in natural size on an ADDISONIA plate, and the desire to show the flowers without reduction in size has led to the selection of one of the smaller-flowered varieties to represent the decorative class.

The development of a "fully double" dahlia flower-head from the "single" and "semi-double" forms in which the dahlia was first known in Europe appears to have required a number of years of cultivation and selection. The credit of originating the first "fully double" dahlia has sometimes been given to a Belgian horticulturist, M. Donckelaar, who is said to have attained this goal in 1814 or 1815. But there appears to be evidence that this result was accomplished as early as 1805 in Kensington Gardens, in London, and even earlier on the continent (Gard. Chron. III. 35:

344. 1904). The first figure of an undoubted "fully double" dahlia known to the present writer occurs on the colored plate 1885 B of Curtis's Botanical Magazine, published in London in 1817, and it is of interest to note that the flower-head there portrayed would now be placed in the "decorative" group. The term "decorative" has been used by English dahlia-growers with rather more latitude than is now the case in the United States, being made to cover also what we now know as the "hybrid cactus" group and at times also the "peony-flowered" group.

"King of the Autumn" was originated by Mr. H. Hornsveld of Baarn, Holland, and according to information supplied to the writer by that gentleman, the variety resulted from Princess Juliana as seed parent and America as pollen parent. It was first exhibited in 1915, when it received first-class certificates from the Dutch Horticultural Society and the General Bulb-Growers' Society of Haarlem. It was placed on the market in 1917 and was first grown in the dahlia border of The New York Botanical Garden in 1918, from a root furnished by Mr. C. Louis Alling of West Haven, Connecticut. The flower-head represented in the plate was gathered in September, 1920, and was drawn in its natural size.

A plant of medium height or sometimes tall, commonly five to seven feet high, with medium-sized, fully double (or sometimes open-centered) flower-heads which are golden-rose, or buff-rose and are typically of the "decorative" type. The stems are smooth or nearly so. Most of the leaves have three or five lobes or leaflets, which are light green, short-pointed, and coarsely dentate, the teeth cuspidate and the margins also minutely cilliolate-serrulate; the terminal leaflets are elliptic, elliptic-ovate or oblong-elliptic; the lateral are rather similar in form but are smaller and have a strongly inequilateral base; the upper surface is smooth except for a slight puberulence on midrib and veins, the lower surface is slightly pubescent or sparingly pilose. The flower-heads are mostly four to five inches broad, are rather flat, and are held erect on strong peduncles. The bracts of the outer involucre are usually six or seven, lanceolate-spatulate, subacute, and coriaceous. The bracts of the inner involucre are mostly ten to twelve, triangular-ovate to oblong-lanceolate, subacute, and membranaceous. The ray florets are usually thirty to one hundred and twenty; their ligules are broadly elliptic to narrowly elliptic and subacute, those of the inmost series are more or less quilled or cup-shaped, the next outer concave, followed outwardly by numerous ligules that are plane or nearly so, the outermost with margins slightly revolute with age; their color is golden-rose or buff-rose, overlaid with terra-cotta tints and towards the base light yellow. The disk florets are commonly sixty to one hundred and forty.

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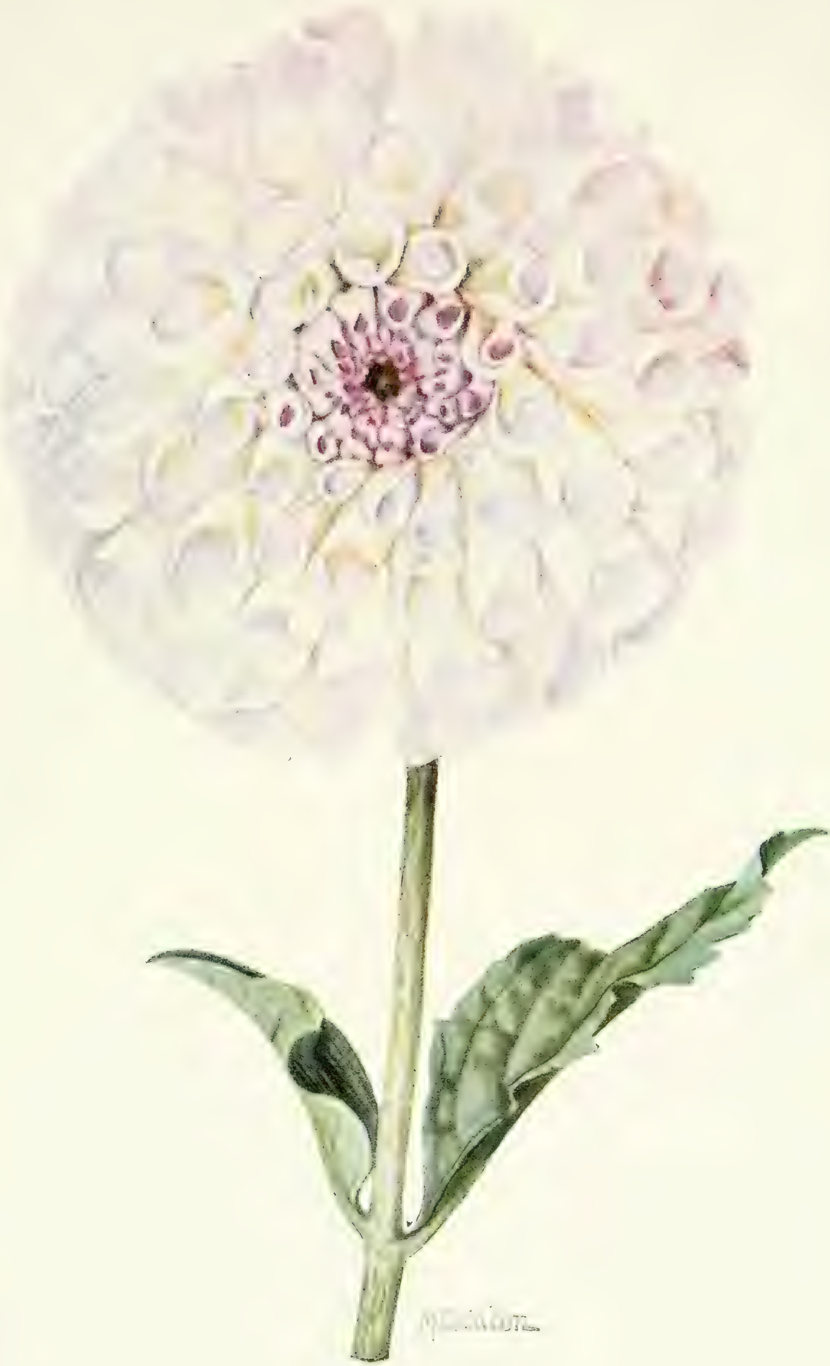

DAHLIA "W. W. RAWSON"

(Plate 223)

DAHLIA "W. W. RAWSON."

"W. W. Rawson" Dahlia

Garden Hybrid

Family CARDUACEAE THISTLE Family

This variety is a fairly good example of the "ball-shaped" type of dahlias of the subdivision known as "show" dahlias, although the flower-heads are larger, the florets less compactly and less spirally arranged, the rays less perfectly cupped than in most of the "show" dahlias of fifty years ago, and the variety thus approaches the "hybrid show" group. Varieties of the "show" group are defined by the American Dahlia Society as having "double flowers, globular or ball-shaped rather than broad or flat, full to center, showing regular spiral arrangement of florets; floral rays more or less quilled or with markedly involute margins and rounded tips." Dahlias of the "show" type were the popular dahlias of Europe and America, more particularly perhaps of England and the United States, during a large part of the nineteenth century. Just when varieties with the ball-shaped flower-heads and cupped or quilled floral rays, the most distinctive characters of the "show" type, were first originated, is not clearly apparent from the available literature, but it was probably before 1820. The term "show" was doubtless suggested by their popularity and predominance in exhibits of cut dahlias and in the earlier dahlia exhibits in Great Britain the term was apparently made to include also flowers that would now be referred to the "decorative" and "hybrid show" groups. In a list of one hundred and sixty-seven briefly described varieties of double dahlias, published in New York in 1835 in the first edition of Bridgeman's "The Florist's Guide," the words "cupped petals," "quilled," "ball," and "ball flower" are used in connection with only eight varieties, but the possible inference that the remaining one hundred and fifty-nine varieties would now be classed as "decoratives" is probably unjustified.

The variety "W. W. Rawson," which is commonly considered one of the best dahlias of its class, was originated by the late Mr. A. E. Johnson of Brockton, Massachusetts, and has been suspected of being a cross between the "show" dahlia "Grand Duke Alexis" and the "decorative" variety "Mrs. Roosevelt." According to information supplied by Mr. J. K. Alexander of East Bridgewater, Massachusetts, the variety was originally named "Annie Bird" but after the purchase of the stock by W. W. Rawson & Co., seedsmen and market gardeners of Arlington and Boston, it was renamed "W. W. Rawson" in honor of the head of the firm, the Honorable Warren W. Rawson.* It was first advertised as "W. W. Rawson" in 1907, but as an unnamed seedling it appears to have been awarded Honorable Mention by the Massachusetts Horticultural Society in 1905.

The variety has been grown in the dahlia border of The New York Botanical Garden since its establishment, beginning with the season of 1918. The flower-head shown in our plate was collected September 28, 1920, and was drawn in its natural size.

A tall plant, commonly six to eight feet high, with moderately large fully double flower-heads, which are white, suffused with lavender or amethyst-blue, and are of the balled-shaped or "show" type. The stems are smooth. Most of the leaves have three or five lobes or leaflets, which are dark green, short-pointed, coarsely dentate, the teeth cuspidate and the margins also minutely ciliolate-serrulate; the terminal leaflets are elliptic-ovate to elliptic-lanceolate, the lateral smaller and with inequilateral bases, but otherwise rather similar, all nearly smooth on both surfaces. The flower-heads are mostly three and a half to four and a half inches broad, and are held erect or slightly nodding on strong peduncles. The bracts of the outer involucre are usually seven or eight, irregularly disposed, elliptic-ovate, becoming lanceolate, subacute, and coriaceous. The bracts of the inner involucre are mostly sixteen to twenty-five, oblong-lanceolate, membranaceous, pale green or straw-colored, and subacute. The ray florets, comprising all ordinarily visible in the head, number usually one hundred and fifty to one hundred and seventy; their ligules are all more or less regularly quilled or tubular by the involution and overlapping of their margins, the color is white, more or less suffused at the apices with amethyst-blue, lavender, or mauve. The disk florets are commonly ten to forty and they are exposed only in the very latest stages of the development of the head, usually after the outer florets have withered; the most central are often imperfectly and irregularly developed.

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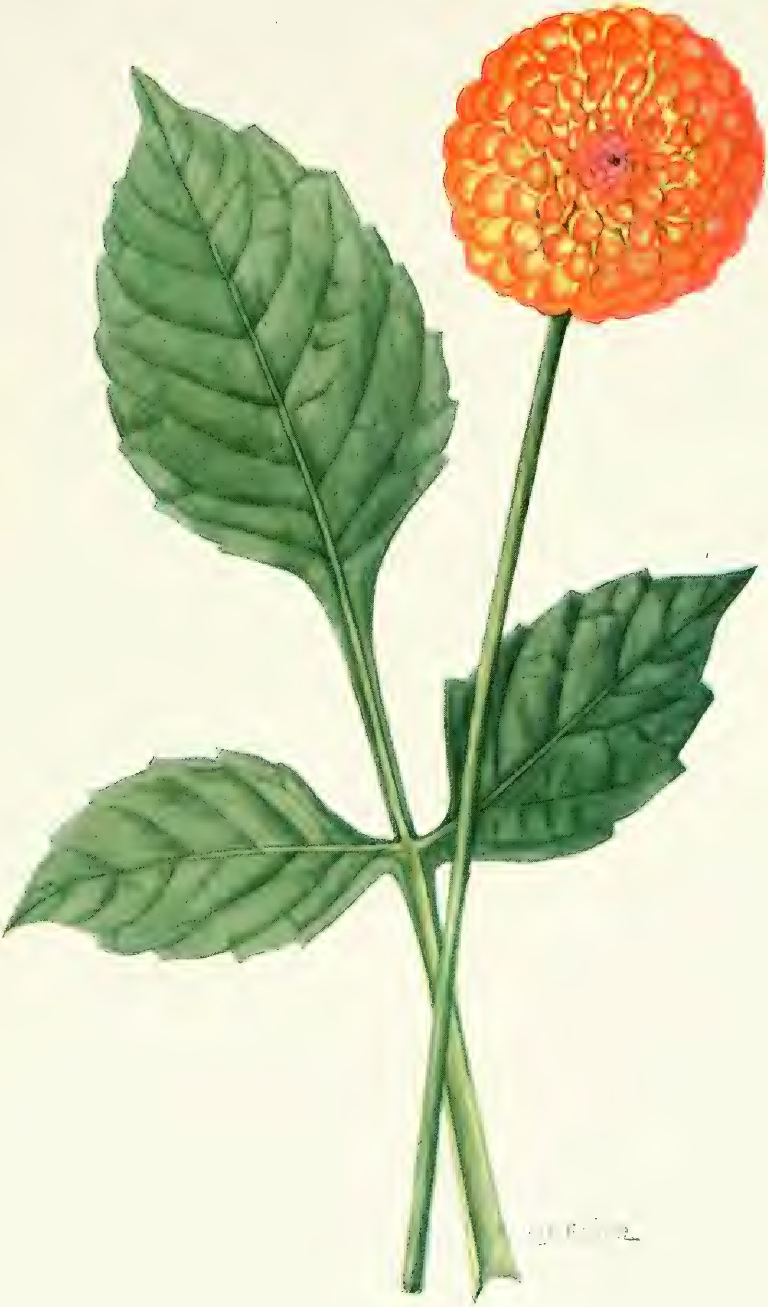
* For biography, see Florist's Exchange **26**: 196. 1908; and American Florist **31**: 110. 1908.



DAHLIA "DOUGLAS TUCKER"

(Plate 224)

DAHLIA "DOUGLAS TUCKER"

"Douglas Tucker" Dahlia

Garden Hybrid

Family CARDUACEAE THISTLE Family

The variety "Douglas Tucker" is a charming representative of what are now currently recognized in trade catalogues and in flower shows as the "pompon" dahlias, a group that appears in the classification adopted by the American Dahlia Society as a section of the "ball-shaped" class, rather than as constituting a class by itself. The line of separation of the "pompons" from the "show" dahlias is wholly arbitrary and is a matter of the size of the flower-head. To qualify as a pompon, the flower-head, according to the definition framed by the American Dahlia Society, must be "under two inches in diameter." The smaller-flowered varieties are usually preferred by those who grow pompons, as they are more distinctive and less likely to be confused with their close relatives, the "show" dahlias. Perhaps the smallest-flowered variety cultivated in America and the one that most often captures prizes for the smallest flowers is the "Belle of Springfield." The pompons commonly make up in profusion of flowers what they lack in size. Most of the modern varieties of this group are of low growth and they are valuable for bedding purposes as well as for cut flowers. In England, the name "pompon" is sometimes made to include small-flowered varieties of the cactus type, as well as those of the ball-shaped type. Although an earlier origin has sometimes been claimed for the "pompons," the researches of Mr. C. Harman Payne (Gard. Chron. III **62**: 132. 1917) indicate that the first variety of this group was raised by J. Sieckmann of Köstritz, Germany, and distributed by him in 1851. These small-flowered dahlias were first known as "Lilliputians" and most of the earlier varieties bore German names. The name "Lilliputian" was succeeded in England, at least, by "bouquet" and as early as 1863 the name "pompon" began to appear, suggested, it is evident, by their similarity to the "pompon" chrysanthemums, which were so called on account of their "resemblance to the little round ball that used to be worn in front of a soldier's shako." In England, many new varieties of pompon dahlias have been originated principally by John Keynes and his successors at Salisbury and by J. T. West of Brentwood. The variety Douglas Tucker was brought out by Keynes, Williams & Co., of Salisbury in 1913.

The variety Douglas Tucker was grown in the dahlia border of The New York Botanical Garden in the season of 1920, from roots supplied by C. Louis Alling, of West Haven, Conn. The drawing was made, natural size, from a flowering branch, taken on September 17, 1920. Owing to the unfortunate loss of the roots during the following winter, the description of the variety has been drawn chiefly from flowers and foliage supplied through the courtesy of Mr. Alling and of Mr. I. S. Hendrickson, manager of John Lewis Childs, Inc., of Flowerfield, Long Island, New York.

A low plant, commonly about three or four feet high, with small, fully double, golden-yellow, carmine-tipped flower-heads of the "pompon" type. The stems are smooth. The larger leaves have three or five lobes or leaflets, a very few of the upper are simple; the leaflets are dark green, short-pointed, and coarsely dentate, the teeth cuspidate and the margins also minutely ciliolate-serrulate; the terminal leaflets are ovate to elliptic-ovate and sometimes irregularly lobed towards base; the lateral are somewhat similar, though smaller with a pronouncedly inequilateral, often cuneate base; all are nearly smooth on both surfaces. The flower-heads are mostly one and one fourth to one and three fourths inches broad, are flattened-hemispheric and are held erect on strong peduncles. The bracts of the outer involucre are usually five to seven, ovate to ovate-spatulate, subacute or obtuse, and coriaceous. The bracts of the inner involucre are mostly fourteen to eighteen, oblong, membranaceous, pale-green or straw-colored, obtuse or blunt-pointed. The ray florets are commonly about one hundred and forty to one hundred and eighty-five in number and are spirally arranged in eight to twelve series; their ligules are orbicular-elliptic, but are cup-shaped or quilled by the involution and overlapping of their margins, the color is golden-yellow, tipped with varying amounts of Brazil-red or dragon's-blood red. The disk florets are usually about fourteen to thirty-two and they are not exposed until the late maturity of the flower-head.

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NOTE.—The species illustrated on plate 187, in volume 5 of ADDISONIA, is **Penstemon unilateralis** Rydb., although the accompanying text, on pages 53 and 54, applies to *Penstemon secundiflorus* Benth. We hope to publish later the text to accompany plate 187, as well as an actual plate of *Penstemon secundiflorus*.

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